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High Cost of Government a Heavy Brake on Business

By A. I. FINDLEY

Editor Emeritus, The Iron Age

IN the two preceding articles we have shown how far and how rapidly increase in the cost of government in the United States—national, State and local—has been outgrowing its old relation to national wealth and national income. It has taken the chastening of these past three years to reveal to American business how much of its present plight is due to extravagance in public expenditure.

One readjustment has followed another in the downward course of the average business. Overhead and direct expense have been cut and then cut again. All the time the cost of being governed has continued to loom up as a breeder of unemployment and an enemy to business health.

We are to consider now the effects of high cost of government upon business—effects so serious that of themselves, all apart from world depression and the speculative crash of 1929, they well might have brought us by now face to face with an economic crisis.

Steel Industry Heavily Burdened

We have learned some things in the past two years as to the effect of high taxes on industry and hence on employment and the purchasing power of industrial workers. President Grace has brought home to Bethlehem employees in a telling way their stake in the campaign against government extravagance. If what the Bethlehem Steel Corporation pays in taxes, he says in the last issue of the *Bethlehem Review*, could instead be distributed in wages, it would mean a 20 per cent increase in the present employment of the corporation's 50,000 workers. In some of the communities in which Bethlehem operates steel plants, as Mr. Schwab told the American Iron and Steel Institute at its last meeting, local taxes alone are as high as 10 per cent of the cost of every ton of steel.

In the United States Steel Corporation's report for 1931 we find that after deducting all expenses of operation, including \$60,000,000 for ordinary repairs and maintenance, also charges of \$47,317,894 for depletion, depreciation and obsolescence and \$5,469,623 interest on bonds, the deficit for the year was \$6,303,518. Taxes were \$33,242,707, or \$4.56 for every ton of the 7,196,017 tons of rolled and finished steel the corporation produced last year. In pre-war years a

IN this third article, Mr. Findley cites effects of extravagantly high cost of government in limiting the employing power of industry. State and local authorities, in imposing heavy taxes upon railroads, have increased unduly the cost of living to the small taxpayer and in fact to every member of the community. Federal Government use of taxes to finance its own increasing competition with businesses from which its citizens themselves get a livelihood is an increasing cause of concern, as the inquiry of the Shannon committee is showing.

A fourth article will consider what is being done and what more must be done to reduce Federal Government cost and to avert bankruptcy in the finances of many American cities.

tax charge of more than a dollar to the ton of finished steel would have been deemed an unreasonable burden. And those taxes of 1931, be it noted, were more than half the amount spent for upkeep of properties valued at \$1,684,000,000 and more than two-thirds of the total charges for depletion, depreciation and obsolescence.

Handicaps on Lake Superior Iron Ore

What the steel industry has borne in the levies of Minnesota and Michigan on the iron ores found in those States is a chapter by itself in tax exaction. Various Minnesota counties, their coffers running over with millions of iron ore tax money, lavished it upon costly school buildings and on salaries that for a time turned the State into a teachers' paradise. Clarence B. Randall, vice-president, Inland Steel Co., has made a study which shows how the tax policy of these Lake Superior States has greatly handicapped the ore industry. Shipments of Lake ores were scarcely more in 1929 than in 1917, yet steel production was 20 per cent greater. Consumers have imported more ore, drawn more from Eastern mines, used more scrap and flue dust—seeking by all means to avoid the use of high cost Lake ores. When business again looks up this quest for lower cost materials of the blast furnace will be renewed with vigor, all at the expense of the iron mining interests of the Lake Superior region.

Taxing Industry Out of Existence

Constantly the daily press furnishes examples of the taxing of industry out of profitable existence. One of the most recent is the decision of the Chevrolet Motor Co. to abandon its Janesville, Wis., branch assembly plant because the Wisconsin income tax law as now administered makes it a losing operation. For this year it would take the profits on 45,000 finished cars to pay this tax, whereas

production would fall well below that number.

At Garwood, N. J., the Aeolian Co. has had a running encounter with the local authorities over levies which imposed upon that company 15 to 18 per cent of the municipal budget. In 1931 an appeal to the State Board of Taxation brought an \$89,000 reduction. But in 1932 the town materially increased the levy and the company thereupon removed from Garwood an important department. Later a merger brought the removal of another department, leaving at Garwood only a fraction of the working force of 1929. Here the effort to lighten the individual's taxes by increasing those of industry left the community a new and heavier burden of unemployment.

One-Third of Railroad Earnings for Taxes

Probably no greater delusion has been fostered in all the course of tax legislation and administration than that which has made large State and local tax levies upon railroad property in the belief that the burdens thus imposed were in the same process lifted from the backs of small taxpayers.

R. H. Aishton, executive committee chairman of the Association of Railway Executives, put much in small compass in the statement he made at the conference on Federal Government costs in New York City on July 11. Class 1 railroads, he showed, paid \$10,169,000 in Federal taxes in 1931 and \$292,415,000 in State and local taxes, a total of \$302,584,000. In that year taxes absorbed 7.24 per cent of the gross earnings of the roads and 31.64 per cent, or nearly one-third, of the net earnings. These amounts mean that railroad taxes are more than 13 times what they were in 1890. In no year since 1920 have the Class 1 railroads as a whole earned the 5% per cent stipulated in the Transportation Act as a fair return.

Transportation Enters into All Cost of Living

All that State, county and municipal tax authorities have done in soaking the railroads, in the belief that by so doing they had left the small income man untouched by the mounting cost of government, has been working by day and by night to increase that same man's cost of living. Both the farmer and the city consumer of farm products have been led to blame the railroads for the great gap between the city store price and what the farmer gets. Both should find reason to revise their thinking in the light of recent history. Both have seen the solvency of the railroads so seriously threatened as to call for Federal Government loans. Both have been shown that as transportation costs are a factor in the living costs of every family, every family ultimately shares the high costs of State, county, and local government that so

unanimously and in so large a proportion have been loaded upon railroad properties.

Motor Industry Overburdened

The railroads, with a tax bill which in 1931 nearly equaled all their dividends—the margin of the latter being a slender sixteenth—are the outstanding example of an industry whose excessive tax burdens are just so much added to the cost of all commodities. Automobiles and gasoline are notable among industrial products which have been picked upon to bear a large tax burden in view of their general use and to some degree their comfort and luxury standing. The 1 cent Federal gasoline tax levied by the present Congress was on top of State taxes ranging from 2 to 7 cents and averaging 4 cents a gallon. With an average gasoline consumption of 600 gallons in 1931, the 26,000,000 motorists used close to 16,000,000,000 gallons, on which the total tax was \$525,000,000. Under the 1 cent Federal tax the annual gasoline tax per motor vehicle is now estimated at \$30 a year, and 10 other forms of taxation cost the average motorist around \$13, making a total of \$43. All taxes paid on the 26,500,000 registered motor vehicles in 1931 were about \$1,046,000,000, or 20 per cent on a valuation which the American Motorists' Association puts at \$5,235,000,000.

Originally the gasoline tax was levied to finance good roads, on the entirely reasonable ground that the chief users of the country's highways should pay for their improvement. But the State governments have quite lost sight of the original purpose of this tax and today it is going to schools and school books, State buildings and other projects, oyster farms, fish hatcheries, charities, pensions, unemployment relief and so on. These

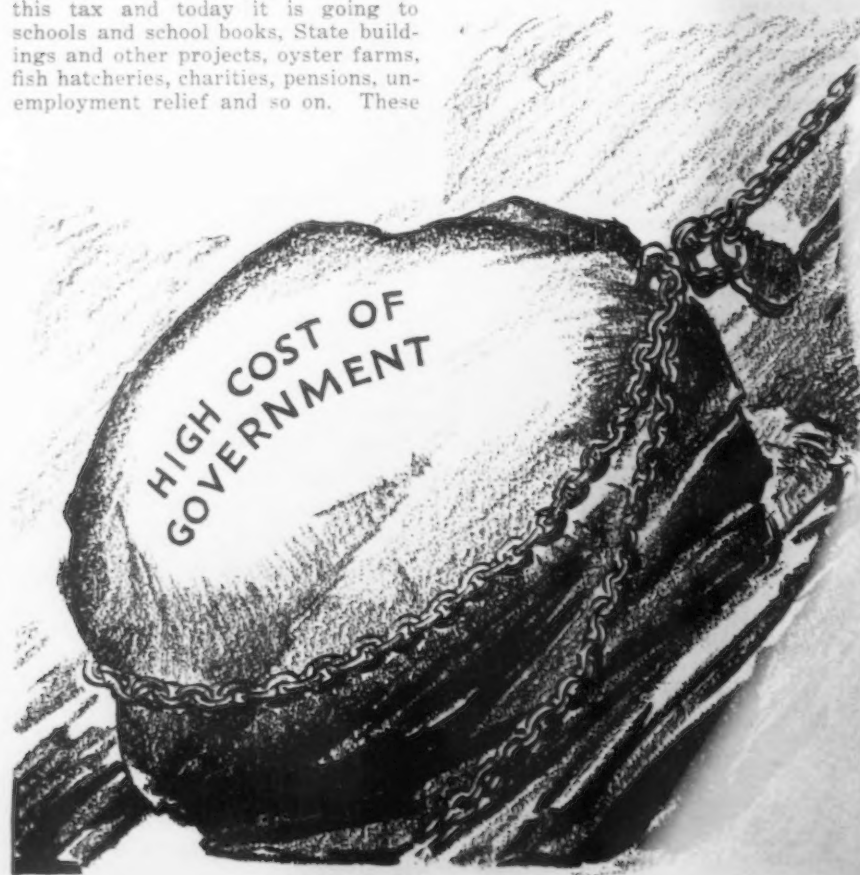
diversions are added proof of the mounting of State taxes to proportions that have multiplied delinquencies on real estate tax levies, the authorities meanwhile rifling the gasoline cash drawer to postpone the day of reckoning.

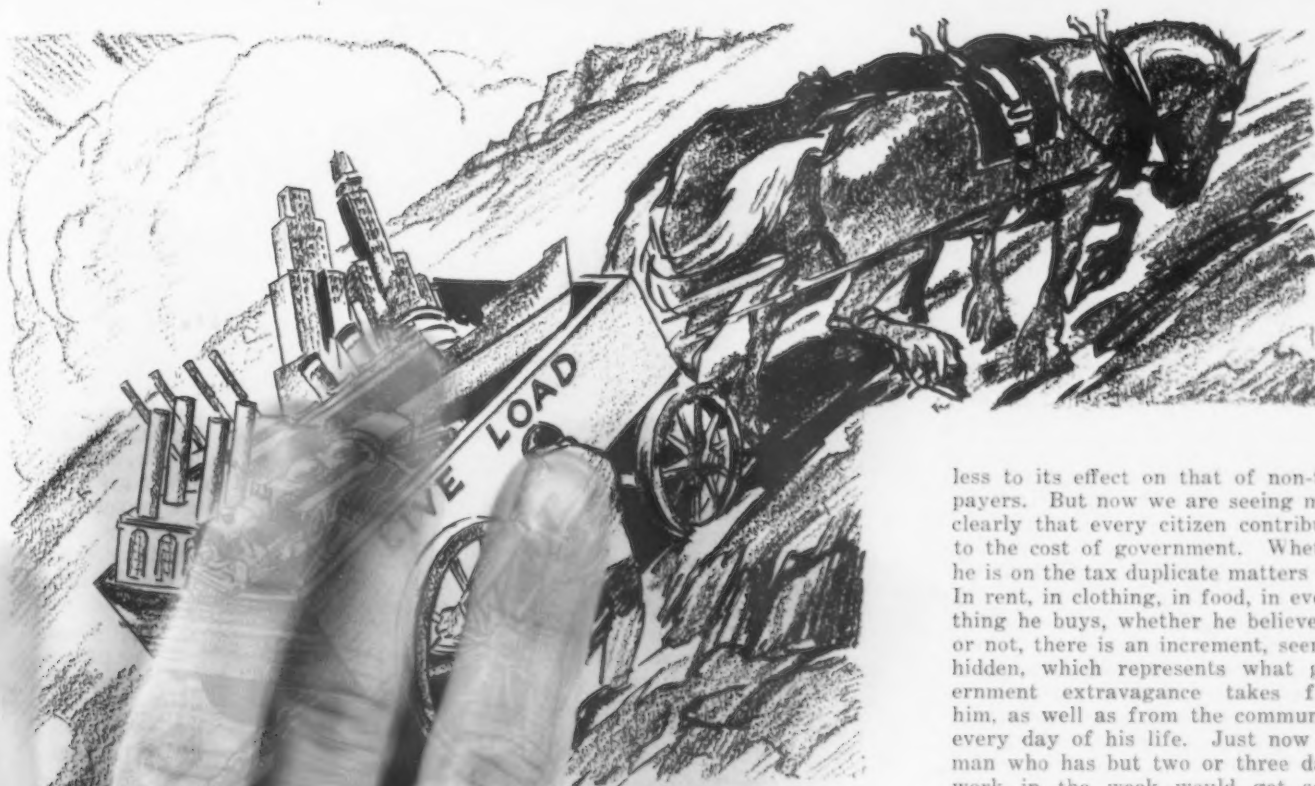
Government's Hurtful Competition with Its Taxpayers

Of great concern to business, in the thrust it is now making at government extravagance, is the large outlay of public money to carry on operations in which the Federal Government directly competes with its own citizens. Since Congress adjourned in July a committee of five, headed by Representative Joseph B. Shannon, has been investigating the transportation and manufacturing operations the Government has carried on and what it has cost to maintain them. It is no news that the Government, as carrier, manufacturer and merchant operates on a large scale and that while the public is taxed to support these great businesses the Government never has to consider taxes, interest, cost of supervision and other overhead, in fixing its charges for transportation, merchandise and services.

Manufacturers with whose products a Government operation competes are cut by a two-edged blade—on the one side a tax to support the competitor, on the other side a market price which they cannot meet and make a profit.

Briefs presented to the Shannon committee at Kansas City and other hearings told of Government compe-





ernment's Inland Waterways Cor-
ation had revenues of \$6,220,000
1931. On the waterways these
arges traverse the Government has
pent \$70,000,000 and is obligated to
pend for construction work alone
about \$150,000,000 more. Yet in fix-
ing rates the Government barge lines
do not figure interest on these enor-
mous sums. A single dollar of taxes
such as that on the overhead
by rail.

the parcels post as an
is furnished in one
In 1930 it handled 837,
ces of parcel post mail—
t of the weight of all mail
it produced but 22 per cent
al revenues. Deducting only
ng expense, the Post Office De-
ent had a parcels post deficit of
0,000. Express companies han-
in the same year 162,000 000
ces and had revenue of \$132,000,-
00. Deducting every overhead ex-
pense including taxes, the express
companies had net income of \$105,000.

By far the most serious indictment
of the squander system of govern-
ment outlay rests on the baneful way
in which it affects business by being
a universal and constantly increasing
overhead. In these three years of
overhauling in all business, drastic
reduction of overhead has been the
order. Necessity, sterner than any
faced before, has forced the cutting
down or cutting out of item upon
item. But no such thing has hap-
pened as yet to taxes.

So long as we had plentiful employ-
ment, high wages and free spending,
little thought was given to the effect
of government extravagance on the
buying power of taxpayers, and much

less to its effect on that of non-tax-
payers. But now we are seeing more
clearly that every citizen contributes
to the cost of government. Whether
he is on the tax duplicate matters not.
In rent, in clothing, in food, in every-
thing he buys, whether he believes it
or not, there is an increment, seen or
hidden, which represents what gov-
ernment extravagance takes from
him, as well as from the community,
every day of his life. Just now the
man who has but two or three days'
work in the week would get some
measure of the price he pays for gov-
ernment waste could he compute what
high taxes have done in reducing his
working time by cutting down the
buying power of the taxpaying users
of his employer's product.

\$2.44 Per Family Per Day

It is gratifying to see how many
capable managers of industry have
taken up the cudgels against destruc-
tive taxes. Jerome R. George, vice-
president, Morgan Construction Co.,
Worcester, Mass., is one of these. In
a letter to *United Effort*, the monthly
publication of the United Engineer-
ing & Foundry Co., he gives figures
from a study he has made of the av-
erage per capita cost at Worcester in
1931, of Federal, State, county and
city government. Federal expendi-
ture at \$34.40, State at \$17.60, county
at \$4.30 and city at \$101 for each
man, woman and child (carefully com-
puted from official figures of popula-
tion and of government outlay) gave
a per capita total of \$157.30, equal to
\$660.56 for the average family of 4.2
persons, or \$2.44 per family for each
of 270 work days left after allowing
for Saturday half holidays, vacations
and lost time.

Mr. George's comments, all thought-
ful and arresting, have this striking
conclusion:

"Just how much of the time the
supposedly individualistic people of
this country are now satisfied to work
for the state is an open question. Un-
less everyone can be made to under-
stand that every citizen pays his share
of taxes, I believe we will keep on
drifting toward socialism. I believe
that public taxes penetrate so deeply
into our lives that even an inmate of
the poorhouse has less when taxes
are high."

and Parcels Post

t barge line of which
knows because of the
down the Warrior River
wer than railroad rates,
in the Birmingham dis-
rates on the Mississippi and
es except the Ohio. With a
investment of \$24,000,000, the

production would fall well below that number.

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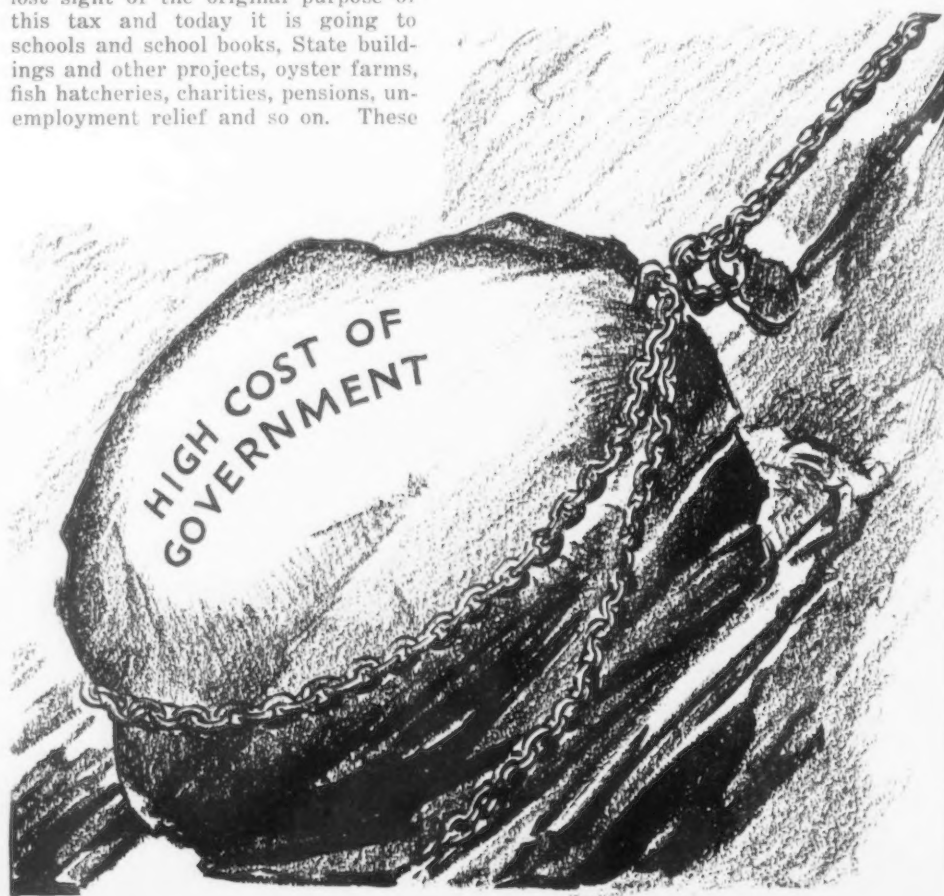
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Casting the Ford V-8 Engine Cylinder Block

THE Ford V-8 engine cylinder block admittedly has offered a difficult and complicated casting problem to the Ford foundry. The successful casting of this block on a commercial basis therefore represents an achievement of no little importance, particularly when it is recognized that large production is demanded and costs must be kept at a minimum.

The design of the cylinder casting is based primarily upon the desire to produce a compact and rigid structure with as smooth and "clean" an outside appearance as possible and to reduce the total number of parts required in the complete engine. The Ford Motor Company was first to make 4-cylinder engines which combined the cylinder block with the upper half of the crankcase (1908 Model T car). This practice has been continued in all 4-cylinder engines produced by this company and has been adopted by many engine manufactur-

ers since that time, until this type of construction is now recognized as conventional. It is logical that Ford should carry it out in the Model 18 V-8 engine. In addition, the exhaust manifolds for both blocks have also been combined within it, thus presenting further complication since double coring for water space between the cylinder bores and manifold passages is required. The result, however, makes the engine much more accessible for maintenance work, and also lighter, factors which have always been considered important in Ford design.

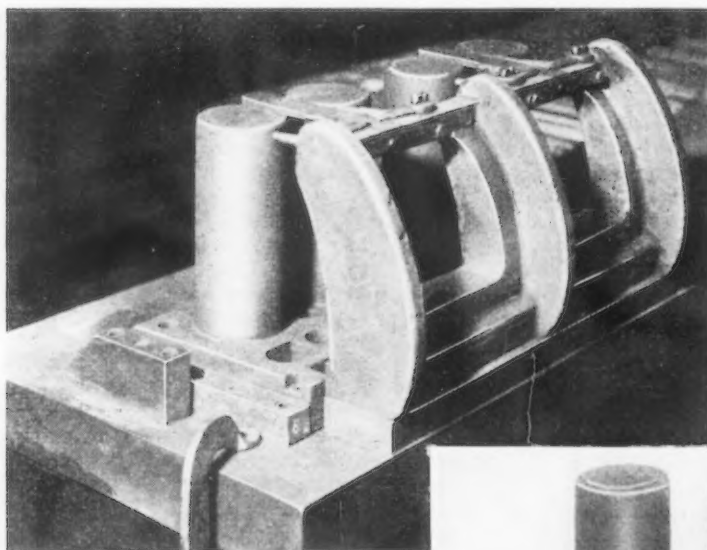
In developing the procedure necessary to produce this casting in large quantities (3000 per day and up) it was at once recognized that previously established foundry methods would have to be revised and in some cases discarded.

Existing practice depends to no small degree upon the skill and responsibility of the core makers and

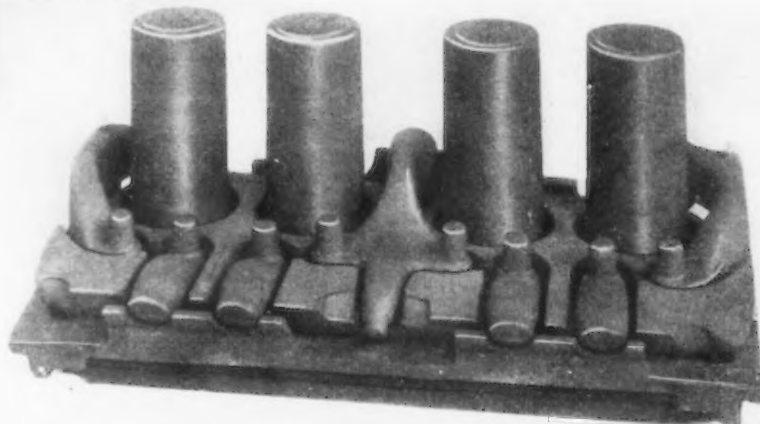
assemblers, hence places obstacles in the way of obtaining large numbers of accurately made castings. To produce a casting of the size, weight and compactness of the V-8 cylinder block was deemed almost impossible unless much greater accuracy and closer control of all operations than usual could be maintained consistently.

It was therefore decided that foundry practice could and would be placed upon a "precision workmanship" basis. Fixtures and gages which heretofore have been considered only as belonging in the tool room and machine shop were brought into the pattern shop and foundry. A new procedure in pattern making, checking of core assemblies and in the degree of accuracy prevailing in the entire preparation of the molds has been evolved.

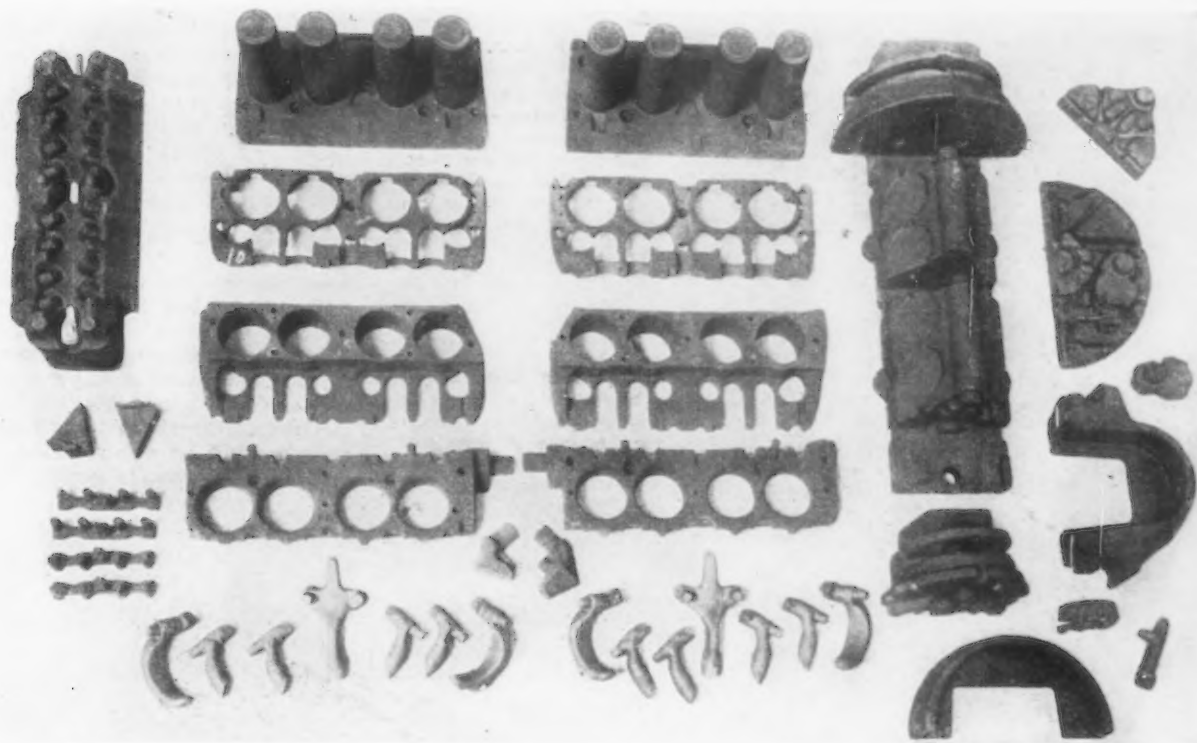
Studies were made of the behavior of the sand when formed into cores, of sand tempering, of core assembly, proper venting and other points relating to this casting problem. It is significant that other than using a "sandpaper stick" to remove the fins from some of the larger cores, no filing or fitting of the cores is necessary, and is prohibited. Cores are made to exact size, and at points where they might change their position in the mold are provided with "prints" at joining points to prevent turning or twisting, or are held together or properly spaced by bolts, pins or chaplets. Accuracy of their relative positions in the core assembly is checked by fixtures or check gages with "go and no-go" indicators. Limits approaching the decimal dimensions of the tool room are



FIXTURE for checking concentricity of barrels on slab core. Note indicating figures on top of fixture. This fixture also checks length of slab and position of barrels relative to edge. All barrel cores are checked in this fixture.



TEMPLATE for locating position of inlet port cores on barrel slab core.



Complete set of cores required in casting Ford V-8 cylinder block. Note right and left-hand cylinder barrel slap core and parts, oil header tube in valve house core, and smoothness of valve port cores.

utilized. "Sixty-fourths" (or less) are common. Except for a few larger dimensions a "thirty-second" will cause rejection.

The mold for the cylinder casting contains 43 cores, not including two gate cores used in the pouring operation. These are assembled in several groups, as follows:

CYLINDER BANK ASSEMBLY

Water jacket cores	3
Valve ports	8
Exhaust port cores	3
Barrel slab	1
Paste-on core	1
	16

(Two of the above assemblies are required per mold, one "right and one "left-hand" due to longitudinal and lateral offsetting of the cylinder banks.)

Valve House Assembly	5
Crankcase Assembly	5
Oil Pipe bosses	1
	11

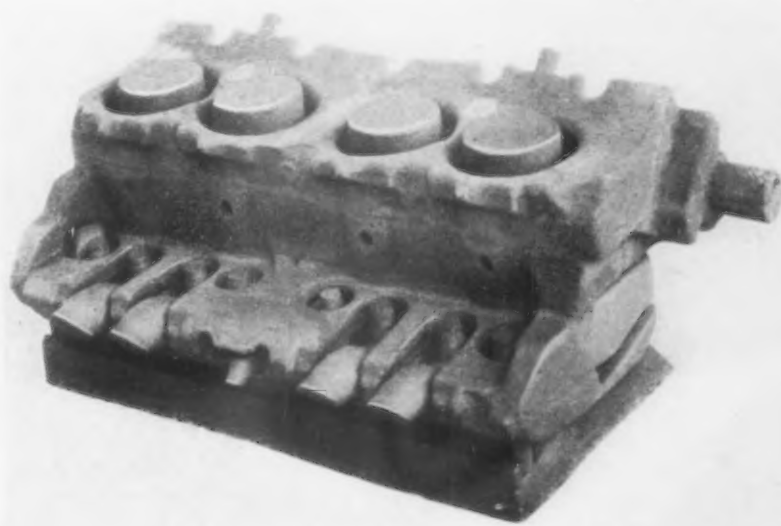
Total 43

THE cylinder bank core assembly has been given particular attention. The barrel slab core which includes the coring for the cylinder bores or barrels forms the base upon which the remaining cores are placed. The correct positioning of the four barrels is checked by a fixture before the other cores are added to it with a limit of plus or minus, 1/32-inch at ends of barrels. This core, which must be particularly permeable for the escape of gases, is sprayed with blacking, whereas a blacking dip is used for the valve port cores and bottom water jacket core where such

great permeability is not required. Still other cores receive an added treatment with oil, and in all cases the problem of venting has had special attention. Most of the cores are "wired" to prevent sagging and to give sufficient rigidity to resist the weight of metal in pouring. The cylinder bank assemblies are cemented and bolted together at two points, and held at two other points by spread pins. A limited number of chaplets are employed, such as those used under the cope to prevent the complete core assembly from rising from its proper position in the drag during the pouring operation. In the pattern shop is a large fixture, which is used for checking the accuracy of the patterns and the

cylinder bank and other assemblies. Metal patterns are employed throughout for all cores and in forming the cope and drag.

The progressive system of assembly, as has been utilized in the casting of the cylinder blocks for the 4-cylinder engines, is also employed for the V-8. The various core assemblies and copes are assembled in and on the drags in accordance with an established procedure. The copes are sprayed and dried on an auxiliary assembly line before coming to the main line. The drags are skin dried by passing through drying ovens before the cores are put in place. After torch drying, venting, checking, etc., the copes are lowered over the drags.

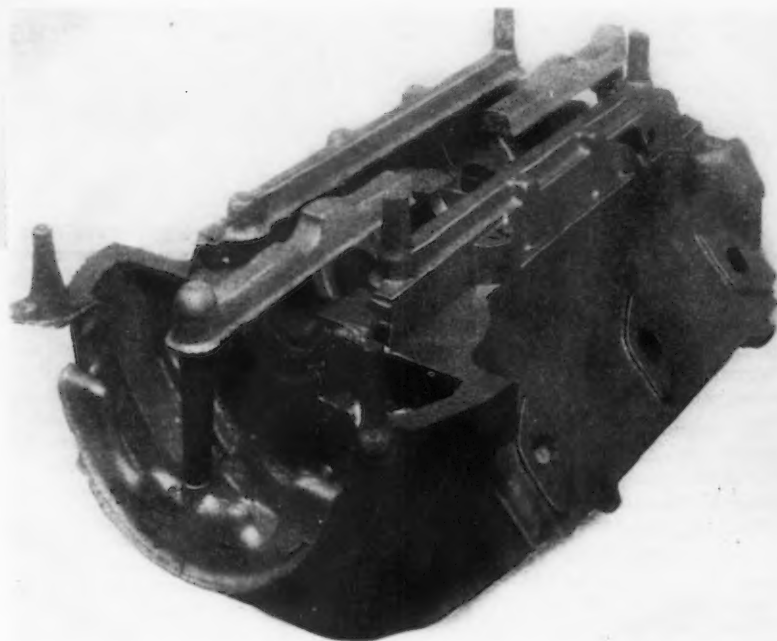


Complete assembly of cylinder barrel cores.

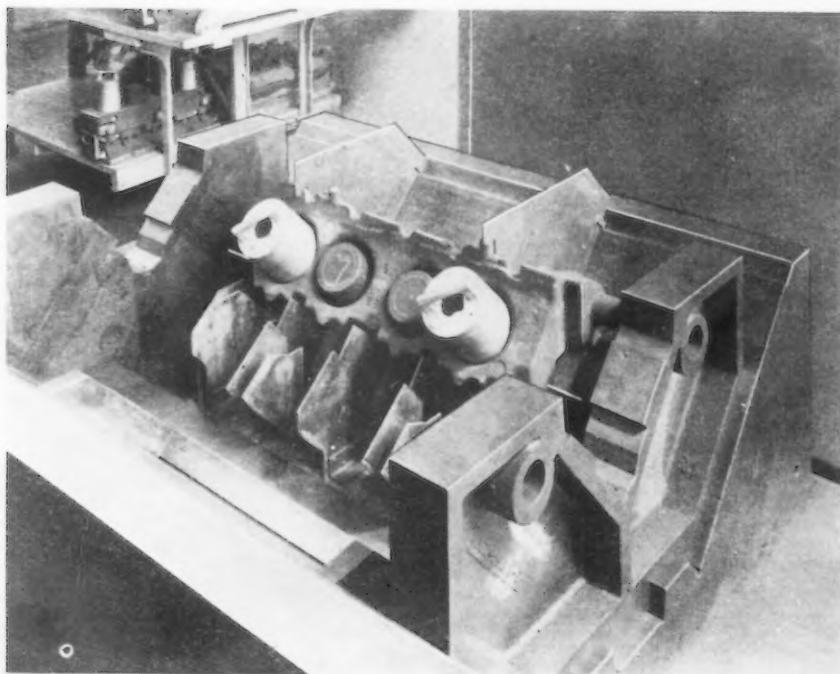


▲ ▲ ▲
VALVE house core (at left) containing oil pressure tube, which is cast integral with cylinder block. Note holder for handling this core prior to assembly in mold.

CYLINDER block casting (below) just after knocking out of mold, showing location of risers and "clean" appearance of surfaces.



FIXTURE (below) for checking accuracy of cylinder barrel core assembly. Ends of fixture are cut to conform with outline of various surfaces of core assembly and their positions are determined by using straight edge laid from end to end. Note numerous sheet metal templates for checking contour and depth of surfaces, as well as cylindrical tube gages for determining concentricity of barrels. Fixture is arranged for checking either right or left hand assemblies, and is employed in inspecting accuracy of cores made from new patterns, should inaccuracies arise in regular operation.



The fitting of the copes on the drags is so close that the pins and sockets are greased to prevent any sticking which might jar the copes when putting them in position. In casting, a "head" of about thirty pounds of metal is allowed above the sprue for contraction in cooling.

The iron employed for the casting is made to regular Ford Grade "A" specifications. Its analysis is Si 1.80-2.10 per cent, Mn. .60-.80, C 3.20-3.50, Su .100 max., and Ph .25-.32, with 15 per cent steel scrap from the Ford machine shops. Usual procedure is for the foundry to receive the iron directly from the Ford blast furnaces. It is brought by rail mounted ladles to 400-ton holders, in quantities suf-

ficient for a day's supply. The metal goes to mixers, then is transferred to 15-ton electric tipping furnaces where it is brought up to the proper temperature for pouring. Cupolas are employed for melting the metal required to obtain the desired mix before it is transferred to the electric furnaces. These are also used for melting the iron when no hot metal of suitable characteristics is available direct from the blast furnaces. In either case the metal is put through the electric furnaces before pouring. From the furnaces, conveyor mounted ladles, each holding enough iron for about three cylinder blocks, are used for carrying the metal to a point near the end of the assembly line where the pouring operation takes place.

By normally maintaining a sufficient quantity of iron for a day's use, it is possible to check and control the analysis closely. Samples of metal are frequently taken. In the control of the sand, checks are made every two hours or more frequently. Regular tests are made for green sand

bond, for compaction and moisture, as well as grain size, due to their influence on permeability.

The castings are shaken out after a specified time has elapsed, when the gates and sprues are knocked off. The castings are then carried by conveyor to the roof of the foundry where they are allowed to cool gradually to a temperature which permits handling. The castings are then cleaned by a high pressure shot blast and transferred to the foundry machine shop. They are machined, checked and inspected before being conveyed to the "Motor Building," where assembly of the engine begins. The weight of the casting in the rough is approximately 219 lb., with a finished weight of about 187 lb.

In addition to visual inspection of the castings, they are given a double water-pressure test. The first is given after milling off the faces and the rough boring of the cylinder barrels, and the second after the barrels have been honed and burnished. A 60-lb. pressure with water at 180 deg. F. is used. The hardness of the casting is checked by Brinell readings to see that the hardness of the cylinder bores is sufficient to withstand wear, and at the same time that portions of the castings of light section do not exceed a machinable hardness.

By the adoption of these methods of foundry practice and control, it has been possible to successively reduce the loss of castings to the remarkably low scrap figure of less than one per cent. At the same time a uniformity



Inspection of cylinder barrel core assemblies prior to placing in molds. Here the cores are set on turntables where concentricity of barrels and position of smaller core parts are checked. The assemblies are then placed on tilting turntables where the presence of any loose sand can be detected and removed, and all core passages found to be free.

of product previously impossible has been attained. The percentage of scrap therefore compares favorably

with that for the four-cylinder engine castings, which has been brought to a similarly low figure.

Comparative Smelting Power of Coal and Coke

By ROY P. HUDSON

Chemist, Elk Horn Coal Corp.,
Wayland, Ky.

OTHER things being equal, a blast furnace generally requires a greater weight of coal than of coke to produce a ton of iron. This is supposedly due to the fact that coal lacks the porosity of coke, and, although the coal is presumably a dry bituminous fuel, its volatile matter contains tarry compounds which have a tendency to fill more or less the interstices of the stock column. This tends to obstruct the flow of the gas, and hanging, slipping and irregular working are the results.

While coal does lack the porosity of coke, it should be remembered that burning coal before the tuyeres of a blast furnace and under a boiler

are two entirely different processes. Long before the coal reaches the tuyeres it has lost all of its volatile matter and has, consequently, changed from a dense to a more or less porous material. The volatile matter of coal is completely expelled at a temperature of approximately 1750 deg. F. This corresponds to a point well up in the reduction zone of the shaft.

Volatile Matter Governs Rate of Driving

It is my opinion that the difference in the rate of driving between a coal furnace and a coke furnace is due largely to the volatile matter of the coal which is expelled within the shaft. This extra volume of gas

would naturally reduce the rate of driving. The amount of volatile matter expelled from the coal is equivalent to 30 or 40 per cent of the original weight of the coal charged, whereas in the case of coke it is 1 per cent or less.

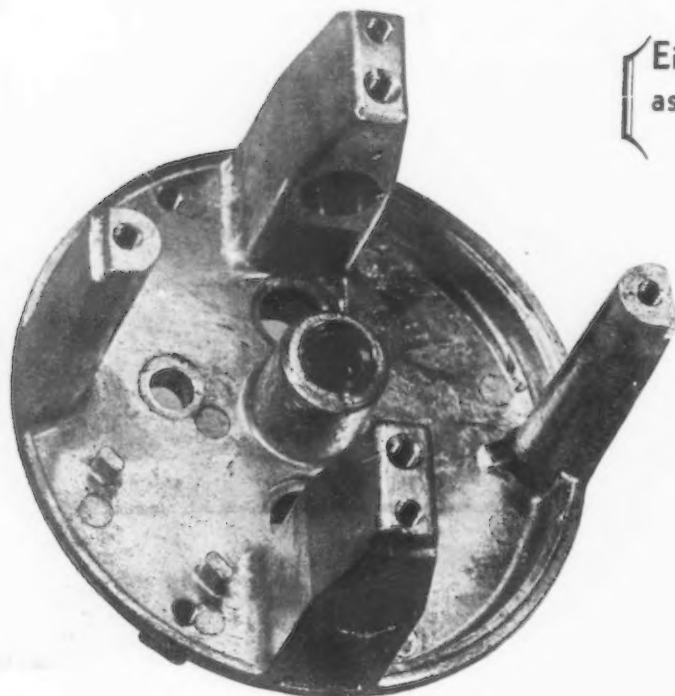
Robert Forsythe has stated that the rate of combustion of coke is 2 to 2½ times that of anthracite coal. Charcoal is more porous than coke and presents three times as great an area for contact with the blast.

However, I doubt that the density of a fuel is an index of its consumption per ton of iron. I have seen furnaces operating on partial and on total coal mixtures, with fuel consumption per ton of iron not greatly in excess of the theoretical consumption based upon the available carbon of the fuel.

A ton of pig iron can be produced with a fuel consumption of 2700 lb. of coal, and this is about the amount of coal at present charged into by-product coke ovens for each ton of pig iron.
(Concluded on Advertising Page 18)

"Better Times"—

{ Eighth in a series of "Performance Pages"
as selected from actual practice by The Iron
Age Editors }



This operation covers four through holes $9/16$ " deep, three bottom holes $3/8$ " deep and two through holes $3/8$ " deep, all size 8-32.

Previous method—59 pieces per hour or 531 tapped holes per hour.

Present method—175 pieces per hour or 1575 tapped holes per hour.



This part includes three through holes $1/2$ " deep, size 8-32.

Previous method—250 pieces per hour or 750 holes.

Present method—700 pieces per hour or 2100 holes.



AT LEFT

This example covers twelve bottom holes $1/2$ " deep, using 8-32 tap.

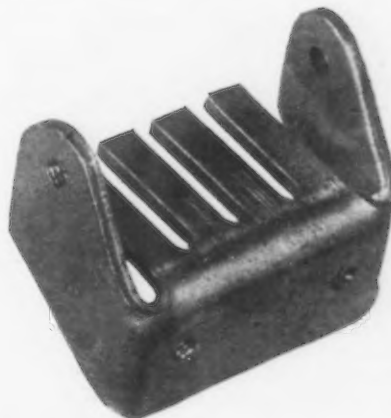
Previous method—100 pieces per hour or 1200 tapped holes.

Present method—295 pieces per hour or 3540 holes.

OPERATION: Tapping

PRODUCTION EQUIPMENT: Haskins High-Speed Tapping Equipment

If this series included a comparison of a pyramid and a modern skyscraper in terms of construction time, it would read: Present time—hours, previous time—centuries. The conquest of time is the outstanding characteristic of modern progress. To the up-to-date manufacturer, keenly interested in the proper selection and application of modern equipment, time savings are of paramount importance. In this, the eighth presentation of "Better Times," we show two to four times the number of pieces tapped per hour as with former methods. The examples are from current installations and the time rate comparison is with good practice immediately preceding the introduction of the new method.



This piece has two through holes in the side and one through hole on the end, size No. 8-32— $3/32$ " deep.

Previous method—150 pieces per hour or 450 tapped holes.

Present method—700 pieces per hour or 2100 holes.



This unit has four through holes in flange $1/8$ " deep, size 8-32 tap.

Previous method—300 pieces per hour or 1200 holes.

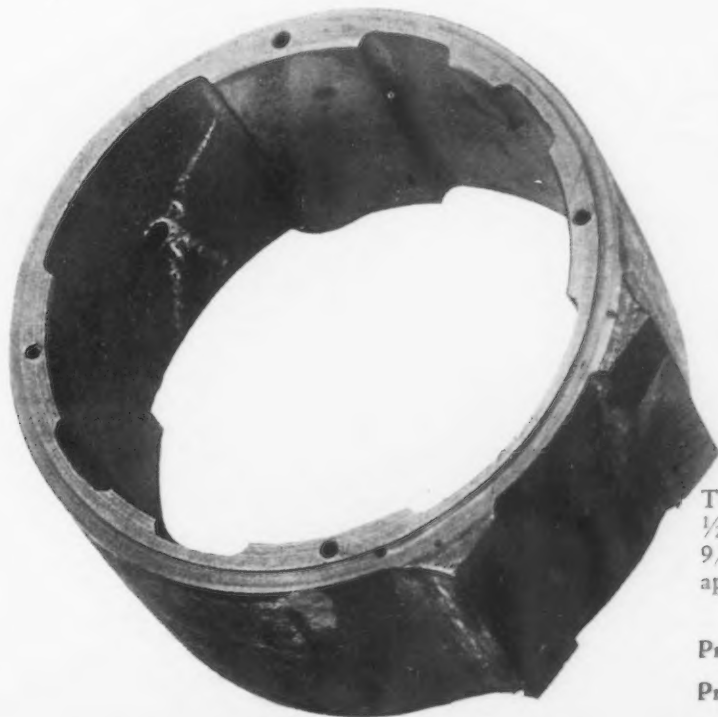
Present method—1000 pieces per hour or 4000 holes.



This example has four through holes $1/8$ " deep in the one flange only, size 8-32 tap.

Previous method—200 pieces per hour or 800 holes.

Present method—800 pieces per hour or 3200 holes.



AT LEFT

This example has eight bottom holes in the rim $1/2$ " deep and four through holes in the base $9/16$ " deep, all holes size 10-32. This frame is approximately 8" in diameter and 4" wide. The material is cast iron.

Previous method—50 pieces per hour or 600 holes.

Present method—140 pieces per hour or 1680 holes.

MONEY SAVING IDEAS

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Colored Cards Show Speed

IT is often difficult for a plant manager to keep track of progress on the part of the production department on orders in transit. One head of a large machine shop has installed a simple system which seems to accomplish this result. Each job running through the plant carries an estimate of the labor time required for completion, which estimate is prepared by cooperation between the estimating and scheduling departments. Time cards for all men are provided in three colors, white, yellow and blue. Each man every night, after finishing work, fills out his day's time on one of these cards. If he is ahead of his schedule he selects a blue card, if he is just meeting the schedule he selects a white card, and if he is falling behind on the estimated time he selects a yellow card. In this way the plant manager is able to tell at a glance each morning, from the prevailing color of the collected cards, the relative progress of work.

This scheme also provides a fairly strong non-financial incentive.

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Radium Tests Improve Practice

MANUFACTURERS of large castings may find that their technique of molding and pouring might be appreciably improved by a series of test photographs made with the use of radium. One manufacturer, through a series of tests taking less than a week, has so altered his practice that a continuing economy is possible without the further use of the gamma ray photography. In investigating this subject he discovered that the Government would furnish radium free for his testing because he was a prospective supplier of Navy castings. The Bureau of Construction and Repair of the Navy Department sent two men to his plant to assist him in his experimental work and the expenses of these two men were his total charge.

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Reclaims High-Speed Steel

IN seeking new economies many manufacturers fail to discover the wealth which may lie in the tool crib. One enterprising man has found that high-speed tool steel can be reclaimed from his tool crib at a cost of about one-third of new material. The work is not difficult and keeps one man busy on full time at a comparatively small general machine shop.



DURING this period of deflation, we have placed unusual importance on our research work. This has divided itself under three major divisions, corresponding to the activities of our business. First, buying; second, manufacturing, and third, selling. We started by making a careful analysis of the activities under each division, endeavoring to split the total activity into its important component parts. We then took each such part in succession, and turned the full glare of our investigating searchlight upon it. In this way we uncovered many things which had been overlooked during the business rush of the years from 1922 to 1929. Such individual items as power cost, insurance cost, factory and office supplies, indirect labor, collection expense, traveling expense, postage, telephone and telegraph, in fact all expense items except city taxes yielded economies under our scrutiny. Thus, while our research activity has not been of the usual laboratory type, we feel that through our type of research we have placed ourselves in line to manufacture and sell our products in such a way as to successfully meet competition and assure our customers of full value.

A. L. Lewis, President,
Lewis-Shepard Co.,
Boston.



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Designs Forgings for Jigs

USUALLY a jig is designed to fit a forging which is to be machined. One forge shop superintendent has reversed this process by designing forgings so that they will readily fit certain standard jigs. In this way on a variety of work the jig expense has been greatly reduced, and it has been possible to make the required alteration in design of forgings without in any way interfering with their intended purpose.

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Forgings Marked For Machining

IN the case of complicated many-sided forgings where specifications call for the machining of two or three sides, it is sometimes difficult to keep track of just which sides should be machined and which should be left rough. One manufacturer has solved this difficulty by embossing a letter "F" on each side which is to be finished. This embossing is done automatically at the time the forgings are made by having an impression cut in the finishing die. The device has been found particularly helpful in the case of some special gears which are finished on one side and left rough on another. The design of these gears is such that the face to be machined varies but little from the opposite face, and yet enough so that there is but one right face for machining.

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Radio Proves a Disadvantage

THE entertainment of machine tool operators while they work is a good idea in theory but it does not always work in practice. In an attempt to improve the morale and comfort of his workers, a progressive manufacturer installed several radios in his shops. A close record of production showed that the use of these radios slowed down the output. The radios were removed and production increased to its former level. The manager is now considering the use of phonographs with records having a lively tempo, but as yet he has no data on the results of such an experiment.

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Welds Malleable Iron

AN Eastern street railway company has reduced the cost of manufacturing malleable iron gear cases by casting these in two parts and then joining them by welding to form the complete product. To accomplish this a special welding wire was developed. The superintendent states that over 3000 of these gear boxes have been made in this way at an appreciable saving.



Economies

MANY operations may be speeded up by cutting some of the out-of-the-way corners in the multiplicity of manufacturing detail. This page, which appears every second or third issue, describes a few economies taken from actual practice.

Melting and Rolling of the Rustless Steels

▲ ▲ ▲

CORROSION resisting steels provided subjects for one of the sessions at the Buffalo meeting of the American Society for Steel Treating. Three papers in which much interesting information was brought out were presented. The manufacture of rustless steel was discussed by E. R. Johnson and R. Sergeson, Republic Steel Corp., Massillon, Ohio. Many types of these steels are produced to meet the demands of various industries and the alloy composition must be varied to meet definite conditions, the authors pointed out. The steel for certain industries must retain its luster after polishing, resist various organic and inorganic compounds, retain stiffness at elevated temperature and resist oxidation and chemical attack. At least 10 per cent chromium is necessary to resist atmospheric corrosion.

For simplicity the rustless steels are divided by the authors into four groups with varying carbon content: (1) Low chrome alloys, 10 to 14 per cent chromium; (2) medium chrome alloys, 16 to 30 per cent chromium; (3) chrome-nickel, 18 per cent chromium, 8 per cent nickel, and (4) complex chromium alloys with other alloy additions. These alloys are applicable for definite uses as follows: (A) Atmospheric corrosion (groups 1, 2 and 3); (B) immersion or liquid corrosion (groups 2 and 3); (C) scaling at high temperature (groups 2, 3 and 4).

Production Methods of a Large Maker

Practices followed by the Republic Steel Corp. in making rustless steel were described. An electric melting furnace either of the arc or induction type must be used in making ingots, as the easily oxidizable metal chromium must be melted under controlled conditions. The arc furnace usually is of the Heroult type with a capacity of not over 15 tons, although the heat size is considerably less. Selected scrap is melted and the slag is removed and replaced by a non-oxidizing lime-silica scrap in basic furnaces and a silica slag in acid furnaces. Pre-heated ferrochrome is then added. When this is melted, ferrosilicon and ferromanganese are added. Nickel additions may be made with the original charge and more added with the ferrochrome additions.

Another method of making these

ONE of the valuable sessions of the technical program of the American Society for Steel Treating during the National Metal Congress at Buffalo in October was on "Corrosion Resisting Steels." This article offers an abstract of one of the three papers presented. High lights on the melting, rolling and heat treatment of the rustless steels are given as developed by a large American producer. Several compositions are dealt with and the statement is made that the production of rustless sheets is about one-third that which could be obtained from rolling common sheets. A subsequent article will review a paper on the salt spray test of these steels and one on heat resisting castings.

▼ ▼ ▼

alloys is by the use of a high frequency induction furnace. Capacities of these furnaces formerly were small but now one producer is using a 4-ton furnace. Another type of induction furnace is that used by the Republic corporation. In this the metallic charge makes a ring of molten metal forming a secondary with a copper coil as a primary. This furnace operates with 800-kw. at 857 cycles. Natural gas forms a reducing atmosphere. About 9000 lb. is tapped every three hours and a month's production is slightly more than one ton per hr. Over 1000 heats have been made from the same hearth. Either type of induction furnace is ideal for melting stainless scrap and any of the stainless alloys may be made in these furnaces.

Ingots usually are cast in less than 5000-lb. size. A 20-in. fluted round mold is suitable for bars such as piercing tube rounds and a 17 x 20-in. rectangular mold is better suited for rolling into slabs. Plain chromium types are very susceptible to moisture in the furnace and during pouring, absorbing gases that are given off during solidification and causing the metal to rise in the ingot. Pouring temperatures of plain chrome alloys are important, the 25 to 30 per cent chrome alloy being the hardest to

handle because the columnar crystals may become very large. The 25 to 30 per cent chrome alloys, complex chrome and nickel grades should be handled in smaller molds as forging usually is necessary.

Rolling Mill Practice

The low chromes, medium chromes up to 20 per cent chromium and the chrome-nickel groups may be rolled direct from the ingot. The complex alloys and the 28 per cent chrome type must be forged from the ingot. Rolling and forging ranges are narrow and pyrometric control is necessary.

It is preferable to charge ingots "red" hot for either rolling or forging because this eliminates danger of rupturing if charged cold and saves time. When reheating, the ingots are usually charged "red" hot into gas-fired regenerative soaking pits with the fire off. After brief soaking the gas is turned on and the ingots are heated slowly, 10 hr. for a 20-in. round ingot of group 3 and approximately 15 hr. for the chrome type. As all rustless steels are slow scaling, long heating periods do not cause difficulties.

Initial drafts on the blooming mill must be light in order not to rupture the corners or tear the skin. Such defects will not heal with further rolling. The complex alloy types and the 25 to 30 per cent chrome type must be reduced by forging. The heating periods are slightly longer and the forging temperatures are approximately 50 deg. F. lower than the rolling temperatures. After the ingots have been reduced, 25 per cent heavier reductions may be made. Finishing temperature varies from 1600 to 1900 deg. F.

After the ingot has been broken down to slab or billet size, all analyses may be rolled, but first the surface must be pickled and chipped or ground. This reconditioning of the surface is necessary after each rolling. Heating temperatures for rerolling are generally lower than those used for ingots.

The slower hand type rolling mills, such as are used in producing tool steel, are better adapted for rolling than the continuous type. The rustless types cannot be rolled with the same set-up as is used for either carbon or alloy steels.

(Concluded on Advertising Page 20)

Wide-Range, Flexible Machine for Short-Cut Milling

ADAPTABILITY to a wide variety of work and facilities for rapid changeover from one job to another are features of the new No. 42 Producto-Matic miller recently brought out by the Producto Machine Co., Bridgeport, Conn.

The machine is offered for short-cut milling operations on either long or short run work, and, as in previous Producto-Matic millers, high production is made possible by the elimination of "non-cutting" time. The basic principle is to mill the work at one position while the pieces are being

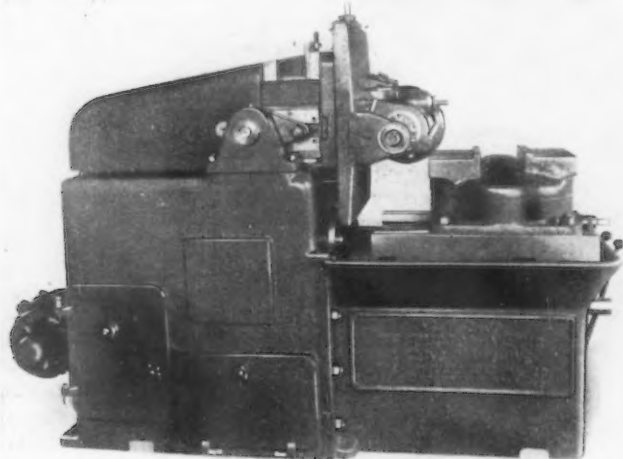
mits fine depth adjustment of the cutters.

Vertical travel of the cutters is obtained through the apron-type cutter slide at the forward end of the ram. The movement is independent of the horizontal travel of the ram, but may be operated in conjunction with the latter to produce any angular or curved motion of the cutters when required. The vertical cutter spindle slide has a travel of 8 in., and the vertical travel of the cutters is 2 in.

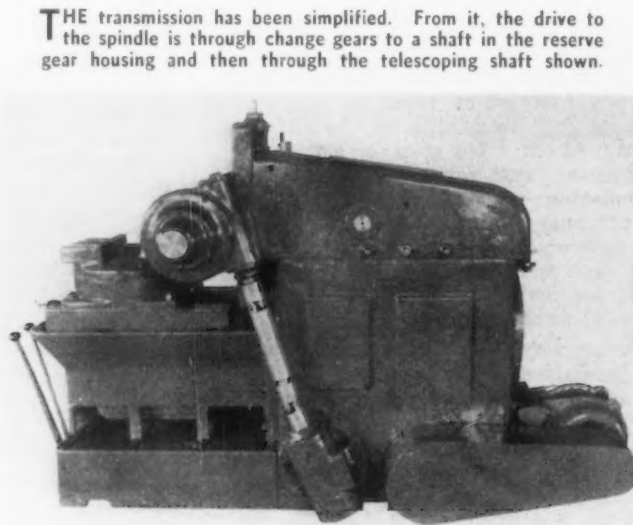
Another feature is the large ratio worm and worm gear drive to the cut-

Spindle speeds ranging from 30 to 1400 r.p.m. are obtainable. A 7½-hp. or larger driving motor is employed. It is mounted on an adjustable plate at the rear of the machine and connected to the transmission shaft either by Texrope drive, silent chain or flat belt.

A two-station work fixture which indexes automatically 180 deg. and is locked during the milling operation is usually furnished, but a fixture that will index four or six divisions of a circle can be furnished if required. All operating mechanism is contained within the cabinet base, which is made in two sections, the right-hand one of which can be made of different lengths to suit requirements. The base also houses a 40-gal. coolant tank and has convenient chambers for feed and speed change gears. All controls are



ALL functions are controlled automatically by a cam drum. Cutters have vertical as well as horizontal stroke, and angular or curved cuts can be made. Cutter speeds range from 30 to 1,400 r.p.m.



THE transmission has been simplified. From it, the drive to the spindle is through change gears to a shaft in the reserve gear housing and then through the telescoping shaft shown.

loaded and unloaded at another, and to so locate the work in relation to the cutters that a minimum stroke of cutter is obtained. This combination, it is stated, makes possible a minimum of tooling cost, as well as high production and ease of operation.

In this machine a cam drum similar to that of a screw machine automatically controls all functions, including the vertical and horizontal strokes of the cutter, locking and indexing of the table and also, in some cases, the clamping of the work. It is 16 in. in diameter and 24 in. long, is mounted on Timken roller bearings and is driven by a large worm gear and worm, both of which run in oil. Cam plates are accessible through two doors in the side of the machine.

The machine has a large shaper-type ram which slides on one V and one flat gibbed bearing on the main base. Its horizontal movement is secured through a hardened roll which contacts with a two-part shoe bolted to the ram, a construction that per-

mits fine depth adjustment of the cutters. Vertical travel of the cutters is obtained through the apron-type cutter slide at the forward end of the ram. The movement is independent of the horizontal travel of the ram, but may be operated in conjunction with the latter to produce any angular or curved motion of the cutters when required. The vertical cutter spindle slide has a travel of 8 in., and the vertical travel of the cutters is 2 in. Another feature is the large ratio worm and worm gear drive to the cut-

ter spindle, designed to provide smooth operation and eliminate chatter. The alloy-steel, ground cutter spindle is fitted into two bronze bearings; these are, in turn, fitted into an adjustable quill, an arrangement intended to facilitate lateral adjustment of the entire spindle assembly. The quill has rack teeth which mesh with a worm mounted on a shaft that extends outside of the housing. A micrometer dial on the end of this shaft permits rapid adjustment, and a binding bolt is provided for tightening the entire assembly after adjustment. Cutters up to 13 in. in diameter can be used.

located at the operating end, as shown. Ample facilities for lubrication are provided and all adjustments can be made conveniently.

The machine is arranged for a horizontal stroke of 4 in. and a vertical stroke of 2 in. The weight of the machine is approximately 7500 lb.

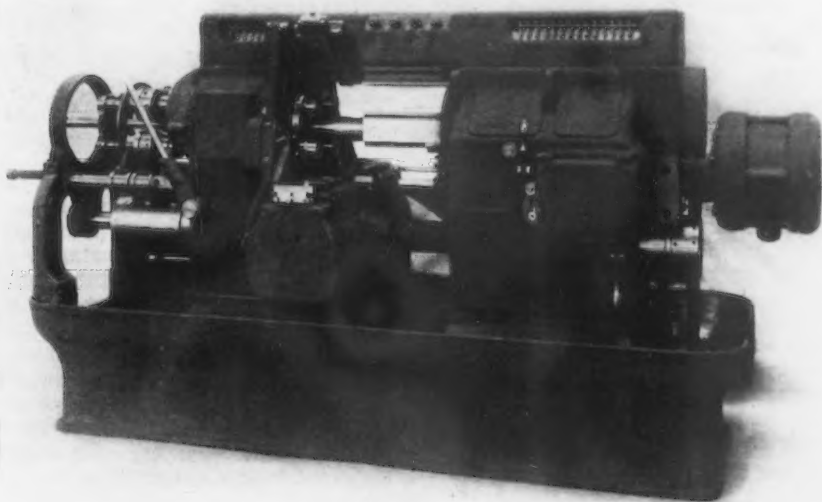
Follansbee Brothers Co. to Build Strip Mill

The Follansbee Brothers Co., operating sheet and tin mills at Follansbee, W. Va., and Toronto, Ohio, has announced plans for the erection of a \$300,000 strip mill at Follansbee. The present open-hearth buildings at Follansbee, with additions, will be used for the new plant. The company's open-hearth production will be conducted at Toronto. Ingots will be shipped across the river to Follansbee for finishing.

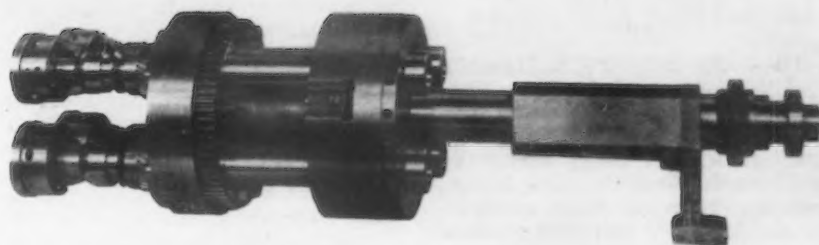
New 7/8-In. Gridley Automatic Features High Speeds and Accessibility

A NEW 7/8-in. multiple-spindle automatic screw machine designed to operate at high speeds for rapid production on small diameter stock has been brought out by the National Acme Co., Cleveland. Features of this automatic, which is designated as the Gridley model R, include simplified design, heavy construction, rigid support and accessibility of cutting tools,

and overall length of the carrier have been increased, thus increasing the center-to-center distance of the spindle bearings and affording more rigid support under heavy forming cuts. By a corresponding increase in the length of spindles, collets and feed tubes, vibration caused by whipping of the stock has been reduced. The spindle carrier bearing surfaces are adjustable



LARGE bearing surfaces and positive alignment are features of the spindle carrier and main tool slide assembly, shown at the right. Increased center-to-center distance of spindle bearings provides better support under heavy forming cuts.



fast and shockless indexing, and adaptability to heavy cuts.

Frame and pan are of box form with a heavy top section to tie the gear section to the spindle frame, a construction that provides rigidity for heavier cuts and permits use of modern high-speed cutting tools to their full capabilities. The pan is a one-piece heavily ribbed casting, which, in common with all other castings, is normalized before machining to eliminate distortion. The oil guards on both sides of the machine are mounted on rollers to permit pushing them aside easily for the adjustment or inspection of the tools. Chip space is unusually large, and the chips can be removed from either end. The pan is so designed that a chip conveyor can be installed.

Width of spindle carrier bearings

for wear. The forced feed automatic lubricating system in the top brace supplies oil to spindle bearings and to the spindle carrier support bearings.

The stem is integral with the spindle carrier and is ground at the same setting as the support bearing surfaces to assure accurate alignment. The spindles are ground before assembling and the holes for the spindle bearings are accurately sized and spaced by a grinding operation.

High spindle speeds, up to 2579 r.p.m., permit maximum use of high-speed cutting tools, as well as the economical use of the machine for stock much smaller than the rated capacity of the machine. Spindle bearings are of the anti-friction type. The front bearing on each spindle consists of three straight roller bearings.

Collets are of the draw-back type.

The finger holders have heavy internal springs to prevent the fingers from flying open at high spindle speeds or accidents when the machine is running without stock. The feed tubes are controlled by a ring and disk so that there is no danger that they will be out of mesh with the feed slide when the cylinder is indexed. A cam prevents the opening of the collets in the working position and serves as a guard to inclose the spindle gears.

The main tool-slide has bronze bearings and is provided with a wiper to keep out chips. All surfaces of the slide are ground. A combination of tools, such as turning and high-speed drilling in one position can be easily arranged. The slide has a positive stop to control depth or length of operations. Main tool-slide cams have wide faces for roller contact. The drum, mounted under the gear box section, is accessible from both sides of the machine.

The four cross-slides are unusually wide and long and move on hardened steel ways fastened to the main frame. With this rigid mounting it is stated that heavy forming cuts may easily be taken at high speed. Each slide has an adjustable stop engaging a stop in the face of the spindle carrier. The second and third position slides are mounted at an angle so that each tool and holder is accessible. Chip guards on the inner end of the cross-slides in the first and fourth positions prevent chips from working back underneath the slides.

Each cross-slide has independent cam control. The two bottom cross-slides are actuated by cams on separate drums that are inclosed to keep out chips. The cams contact with rolls at the center. A separate cam on each drum moves the upper slide. There is a separate drum carrying two sets of cams at the front end of the cam shaft for independently operating threading, drilling, reaming or accelerating attachments in the second and third positions.

For indexing a modified Geneva mechanism is provided, and to rapidity and smoothness of indexing is attributed in part the large productive capacity of the machine.

The vertical stock stop is in the fourth position. This drops out of the

(Concluded on Advertising Page 18)

Boring Machine Designed to Use Either Diamond or Carbide Tools

HOLES up to approximately 6 in. in diameter can be bored on the Cimatool diamond or cemented-carbide boring machine illustrated, which is one of three types recently announced by the City Machine & Tool Co., Dayton, Ohio. The machine is built in both single and double-end types and with one or more spindles to suit production needs. Tooling is special to meet requirements of the work. The machine is said to be particularly suitable for boring the larger sizes of pistons, connecting rods, electric motor frames, etc., and also cylindrical valves of all kinds.

Operation is the reverse of that of the company's bench-type boring machine. In this unit the revolving spindles do not have a feeding movement, but the work, carried on a reciprocating table, is fed to the spindle. As in the bench-type unit, however, operation is entirely automatic except for loading, unloading and starting the machine.

Provision is made for quickly traversing the work to the boring tool,

THE automatic boring cycle includes quick traverse of the work to and from the tools. Both single and double-end types are made.



and in the case of interrupted bores, for quickly traversing the work across such gaps in the bore. After the operation has been completed, the work returns quickly to the starting point. The required sequences of traverse and feed movements are obtained by means of stops on the table which operate hydraulic valves. Depressing of the starting button starts spindle rotation and makes operative the hydraulic feed.

At the completion of the boring op-

eration a second stop carried by the table pushes the electric stop-button, which cuts off the electric power and causes an electric brake instantly to stop the motor and the spindle rotation. The hydraulic feed remains operative, however, for quickly returning the table and work to the starting position. The table is carried by one V and one flat bearing, which are completely inclosed to protect them from borings, and are thoroughly lubricated from oil reservoirs.

Small-Hole Collapsing Tap Has Sturdy Chasers

A NEW small-hole collapsing tap, featuring sturdy, rigidly-supported chasers, is being offered by the Geometric Tool Co., New Haven, Conn. Except for the chaser construction and front end operating mechanism, the new tap, designated as the Class SL, has many features in common with the company's Class S taps. It can be used in live spindles

or stationary holders without additional parts, and may be operated as a plate trip or a spool trip tap. It may be reset by the handle or by a fork or yoke riding in the spool section of the closing sleeve. The SL tap can be used as a lever trip tap, tripping the tap by contacting the handle with a suitable stop on the cross-slide.

Chasers have ample metal in the body and a long bearing support. Rigid support is provided back of the cutting teeth and supplementary support over the shoulder below the thread. The construction is said to permit tapping to a shoulder or to a bottom without the use of special or overhanging chasers. The tool is locked by means of a half ring pawl. A wide range of size adjustment is provided.

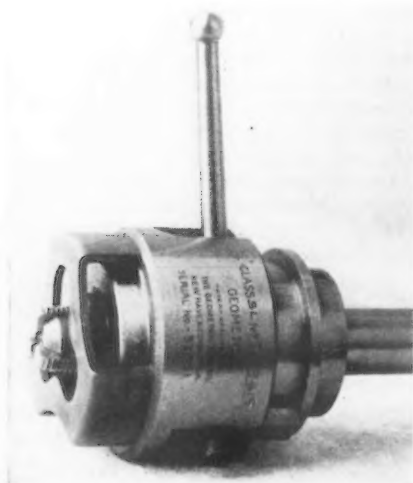
The overall length, exclusive of

shank, is 45/16 in. and the outside diameter is 3 1/4 in. Capacities are: Diameters, straight threads, 1-1 3/4 in., inclusive; pipe threads, 3/4 in.; coarsest pitch, 14; and length, 1/2 or shorter.

Electrode Holder for Hydrogen Welding

A NEW type electrode holder has been developed by the General Electric Co. for atomic-hydrogen arc-welding with flexible tungsten electrodes. These flexible electrodes are carried in curved tubes, forming a part of the holder, and are brought into position by the means of a screw feed ejector. The new electrode holder

(Concluded on Page 717)



(At left) Rigidly supported chasers feature this small-hole tap.

(At right) The new electrode holder facilitates atomic hydrogen welding.



The National Budget—A Challenge to Industrialists

By DR. LIONEL D. EDIE

THE deficit in the national budget is a challenge to industrialists as well as to financiers. It threatens to hold industry in a state of stagnation at the bottom of depression until the evil is corrected.

It may at first seem far-fetched to attach so much industrial importance to a question of government finance. However, a little consideration will make clear the ways in which our national deficit constitutes a major millstone about the neck of industry.

The Facts About the Budget

The first three months of the fiscal year beginning July 1 has produced a deficit of about \$400,000,000 against ordinary expenditures alone. An additional amount of about \$260,000,000 was required for extraordinary expenditures, principally for the Reconstruction Finance Corporation. Technically the latter sum is not a part of the deficit, but in any event it has the effect of adding to the borrowing requirements of the Government.

The first quarter of the present fiscal year was abnormal, in that the new tax measures were just becoming operative and revenues therefrom were lower than they are expected to be in subsequent quarters. However, when allowance is made for this consideration, the deficit for the full fiscal year, against ordinary expenses alone, appears to be in the order of one billion dollars or more. This sum has to be borrowed by new issues of notes or bonds.

Added to this borrowing are the requirements of extraordinary character, such as for the Home Loan Banks and for the R.F.C. Estimates of the total amount are difficult, but a minimum of one billion dollars appears conservative.

Ordinary and extraordinary requirements together indicate a borrowing need for \$2,000,000,000. Part of this amount has already been provided by new Government issues since June 30 last, but probably at least \$1,500,000,000 more will have to be borrowed before June 30, 1933.

The State of the Government Bond Market

The new issues to date have been short terms and have been heavily oversubscribed. But these oversub-

scriptions are not indicative of a healthy market. The banks are loaded with nearly \$500,000,000 excess reserves and are eager to earn some return on these idle funds. They bid for the short-terms because they lack confidence in long-terms. They lack confidence in long-terms because the budget is seriously unbalanced.

Hence, the situation is unsatisfactory. Yields on short-terms have been driven down to fractions of a per cent. Money goes a-begging. Bankers complain bitterly of the small return. The Federal Reserve finds its easy money program up against a stone wall. What is the trouble?

The trouble lies in the fact that the United States Government has failed to balance its budget and everybody knows that a great battle must be fought on the budget next winter.

The lame duck session of Congress will be confronted with a huge deficit, although when Congress adjourned last summer, word was passed out that the budget had been balanced.

Not only will the deficit be there, but there will be a mass of new demands upon the Government to spend money. The cash bonus will be attempted. Claims for further unemployment relief and agricultural relief will be pressed. Currency inflation devices will be advanced. All of these threaten further unbalancing of the Federal Budget.

Holders of long-term Governments saw a sharp slump in those securities last winter because of the budget crisis. They see the possibility of another budget crisis next winter and it need not be surprising if they again begin to feel nervous about long-terms.

Under these conditions the floating debt, already nearing \$6,000,000,000, cannot be funded on reasonably economical terms.

A long-term issue is made extremely difficult, if not impossible, for the simple reason that the finances of the Federal Government are not in balance.

So long as the public lacks full confidence in long-term issues of the National Government, that same public is not likely to have confidence in the economic situation at large. Banks play a defensive game by adhering

strictly to short-term assets. Money piles up in a stagnant pool. Major commitments of all kinds tend to be postponed. Industrialists find progress arrested. spurts of recovery strike a snag. Everything is held up. Stagnation. Why? Because Uncle Sam is writing too much red ink on the books in Washington.

Regardless of who is elected President on November 8, this fiscal situation will confront Congress next winter. If the challenge is met squarely and the budget is put on a sound basis, there is ground for hope of a step forward all along the line in economic recovery next spring.

There is urgent need to solve the problem this winter, in order that all the forces tugging at the leash of recovery may be able to assert themselves next spring. There are abundant forces eager to surge forward, but an unsound fiscal condition paralyzes them.

The Attitude of Industrialists

What affair is this of industrialists? It is vastly more important to them than is raising the tariff a little on light bulbs or on steel. It is vastly more important to them than is cutting the price of steel rails or obtaining a small order for steel from a railroad which borrows some more money from the Reconstruction Finance Corporation.

All through this depression industrialists have seemed to think that their job has been to stick to their own knitting, to make detailed readjustments in their individual factories, to slash costs here and fight for a market there. But all the time the whole structure was sliding farther down hill. They were losing ground.

The economic machine in the large should be their business too. And at this moment, the economic machine in the large tends to stall. The obstruction is too much Government spending and too little Government revenue.

This obstruction is felt in a thousand ways at the doorstep of every mill and factory in the land. Does any one suppose that major commitments of any kind are going to be made when the Government itself is running deeper and deeper into the red? Until the intelligent public can have

unqualified confidence in the soundness of the national finances to the point where long-term issues of Government bonds are feasible, will that public have confidence in any basic markets?

This country has, in the past three months, witnessed some valiant efforts to square around and to generate new vitality in our business life. Is it not a shame to stifle these efforts by letting the Government deficit to ride?

Nevertheless, the evil will not be corrected without a struggle. The mere fact that leaders of both political parties have come out for a balanced budget does not settle the question. A far-flung political struggle has to be waged.

In this struggle, the job-holders will be arrayed against the taxpayers. The bonus-seekers will be arrayed against the economy-seekers. The claimants for further relief will be arrayed against the defenders of the Treasury. The currency inflationists will be arrayed against the sound money school.

This struggle will probably be made during the next three to six months. The public is not prepared for it. Industrialists have given no indication of being alive to it.

We have already had an illustration in the affairs of New York City how such matters are allowed to drift along. The inertia and ineptitude of the public in dealing with the deficit of that great city is a forewarning of what may be expected when the show-down on the national deficit arrives.

Huge deficits, huge Government borrowings, delay in facing the realities of sound finance—these were the roads to ruin taken by nearly every country in Europe after the World War. Have we learned anything from that experience? Could there be greater folly than to allow America to drift down the same course?

America is so near to recovery and yet so far. The barrier is the national budget.

We shall never eliminate it unless the industrialists make the Government's business their business.

The challenge will not wait. If we fail to come to grips with the problem in the immediate future, we but make the way easy for the currency inflationists to seize the reins.

The United States faces a great test of the capacity of democracy to set its house in order. The test is simple—balance the budget.

Many critics have attacked the confused role played by captains of industry during the past three years. Leadership has been on the defensive. Leadership now has an opportunity to manifest itself in the great task of putting the affairs of the American Government on a sound basis.

American Valuation May Be Adopted as Tariff Basis

President Hoover's Instructions to Tariff Commission Suggests Possible Change—Cites Unemployment in Various Areas

WASHINGTON, Nov. 1.—Nine areas are listed as being unfavorably affected in employment by increased importation of iron and steel products in a message President Hoover sent last week to Chairman Robert L. O'Brien of the Tariff Commission. The points are all in the interior, though one, Bethlehem, Pa., is near the seaboard. In addition to that point, those named by the President are Pittsburgh, Gary, Youngstown, Weirton, W. Va., Atlanta, Ga., Birmingham, Buffalo, and Provo, Utah.

Complaints of the domestic industry also emphasize particularly the effect on employment along the Atlantic seaboard. The President, however, in the areas he enumerated, basing his statement on a list furnished by the Department of Commerce, goes further and shows that imports have thrown men in the iron and steel industry out of employment far into the interior sections of the country.

In the metal goods industry, another of 16 industries the President said are being affected by importations, he lists 10 areas. They are: Rockford, Ill., Trenton, N. J., Worcester, Mass., Minneapolis, Minn., Erie, Pa., Wheeling, W. Va., Oakland, Cal., Reading, Pa., Utica, N. Y., and Cincinnati.

The message of the President followed his recent oral instructions to Chairman O'Brien as to the necessity for investigation of tariff schedules covering industries affected by depreciation of currencies in foreign countries.

President's Action Supports Movement of Steel Institute

Coming at a time when the American Iron and Steel Institute is making vigorous efforts to check alleged dumping of iron and steel in the American market, the President's action is held to afford great support to its movement. The areas in which employment has been unfavorably affected include those which, the President says, have shown an "actual increase of unemployment or alternatively where it is inevitable that it will increase from importations arising out of this cause unless they be halted." It is therefore a list which apparently is not intended to cover iron and steel seaboard points which long have suffered reduced operations and employment but rather supplements them and is taken to sound a warning and propose a quick remedy

to stop further inroads on employment.

"You recognize that currencies in 30 countries have now depreciated from 5 to 55 per cent, which has reduced the standards of living in those countries and greatly widened the difference in cost of production between the United States and those localities," the President pointed out.

"I would therefore be obliged if the Tariff Commission would expedite this matter in order to afford all possible relief to unemployment in those commodities. I urge this expedition because of this possible retardation of increasing employment of our people. If it shall prove that the differences in cost of production between here and abroad in these industries have altered the basis of the tariff duties, I wish to receive recommendations of the Tariff Commission at the earliest possible moment."

Most of the alleged dumping of steel comes from countries which are still on the gold standard but whose wages are so amazingly low that it is clear prevailing duties in the American tariff are entirely inadequate to protect the domestic industry.

American Valuation May Be Established as Tariff Basis

The greatest interest in the President's letter therefore lies in the suggestion for altering the basis of tariff duties. Manifestly, this points to the possible establishment of the American valuation. This can be done by the President upon recommendation of the Tariff Commission. The increase in duties by 50 per cent, also within the power of the President through recommendation of the commission, would not provide adequate relief against imports of numerous lines of steel products.

In passing the Hawley-Smoot bill, Congress realized that the so-called flexible provision, permitting increases or decreases of duties by as much as 50 per cent, would not always sufficiently protect American industries. Congress therefore added the paragraph which gives the President authority to change the basis on which duties are levied from the foreign value of the imported article to the domestic selling price of the comparable American product. This may be done by the President if the Tariff Commission so recommends.

The Tariff Commission has begun its investigation and in view of the urgency of the situation as emphasized by the President is expected to make a recommendation soon.

Metallurgical Progress Reviewed at Advisory Board Meeting at Pittsburgh

A RECORD-BREAKING attendance of 413 persons was registered at the technical sessions of the sixth open meeting of the Metallurgical Advisory Board of the Carnegie Institute of Technology, held in Pittsburgh, Oct. 28, in conjunction with the fall meeting of the iron and steel division of the American Institute of Mining Engineers. The interest shown in both fundamental and applied results created a general stimulus to the further continuance of the work and its application in the steel industry.

New projects on which progress was reported included the crystallographic orientation of phases formed in the transformation of austenite and the influence of deoxidation and furnace manipulation on the physical properties of open-hearth steel. Continued progress was shown in the study of the pure iron-manganese-carbon and iron-chromium-nickel alloys, and in the deoxidation of open-hearth steel with manganese-silicon alloys.

Iron-Manganese-Carbon Alloys

Dr. F. M. Walters, Jr., recipient of the 1932 Howe medal of the American Society for Steel Treating for his investigation of pure iron-manganese alloys, ably summarized the results of his painstaking and comprehensive work on this system. Dilatometric studies in conjunction with X-ray examinations revealed interesting relationships between the composition and the rate of transformation in these alloys. Microscopic investigations by Drs. V. N. Krivobok and Cyril Wells indicated the variation of structure with composition under various treatments of the same series of alloys. Determinations of the phase limits at substantial equilibrium in pure alloys of iron, 10 per cent manganese, and 0.01 to 1.4 per cent carbon were presented by Drs. Krivobok and J. F. Eckels. These reports were discussed by John H. Hall, technical assistant to the president, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., and by Jerome Strauss, chief research engineer, Vanadium Corp., of America, Bridgeville, Pa., who pointed out the practical interest of the work on the 10 per cent manganese alloys in connection with the reduction of heterogeneity to which alloys containing more than 1 per cent manganese are subject. The greater stability in the homogenized condition should be of significance in welding and shrinking operations on alloys of this type containing considerable carbon.

Progress in the investigation of the influence of carbon, proportions of chromium and nickel, and of additional modifying elements on the decompositions of iron-chromium-nickel alloys at elevated temperatures, as revealed by subsequent impact and corrosion tests, was interestingly presented by Dr. Krivobok. Modification of composition and of prior heat treatment failed to produce any completely resistant material. Only vacuum-melted alloys containing 0.01 to 0.02 per cent carbon were free from evidences of inter-granular corrosion. Exposure of specimens under loads of 8000 lb. per sq. in. at 1500 deg. F. to various gases indicated the shorter lives of specimens in contact with corrosive gases such as SO_2 . The latter test is aimed to determine the alloys of greatest resistance under these conditions. The author expressed appreciation for assistance in this investigation by graduate students of Carnegie Institute of Technology.

That corrosion resistance to aqueous solutions at ordinary temperature need not in itself disqualify a rustless steel for service at high temperatures, though intergranular corrosion is evidence of carbide precipitation, was pointed out in the discussion by Dr. H. W. Gillett, director, Battelle Memorial Institute, Columbus, Ohio. He also indicated the danger of employing a pilot test so drastic that materials of superior resistance could not be distinguished from their weaker sisters. It was further suggested that there may be critical temperature ranges for various materials above and below which they render satisfactory service. The time effect stressed by Dr. Krivobok appears a useful measure of the comparative stability of a series of alloys, he said.

Strong Deoxidizers in Steel Making

In the opening report on the physical chemistry of steel making, Dr. C. H. Herty, Jr., in his enthusiastic manner told of the laboratory scale experiments on the ternary deoxidizers of the manganese-silicon-aluminum and the manganese-silicon-zirconium type being conducted with the assistance of Dr. G. R. Fitterer of the United States Bureau of Mines, and research fellows J. M. Hodge and D. L. McBride. The purpose of the work is a rating of these strong deoxidizers in terms of the rapidity of elimination of the resulting inclusions from the steel. J. H. Critchett, vice-president, Union Carbide & Carbon Research

Laboratories, Inc., New York, discussed the attack on this problem.

A new study of the iron oxide content of slags in a small stationary furnace as influenced by the furnace atmosphere and other factors was outlined by C. F. Christopher. Aimed at a more exact control of FeO in the open-hearth, this project is being undertaken with the assistance of Prof. W. Trinks.

Deoxidation with Manganese-Silicon Alloys

Dr. Herty summarized the results of plant work on the deoxidation of open-hearth steel with manganese-silicon alloys, which have just appeared as a 70-page publication, Bulletin 58. Determinations of cleanliness by electrolytic extraction, Epstein rating, and inspection for internal seams show cleaner steel as the amount of manganese-silicon alloy added is increased to about 0.10 per cent silicon. With this percentage of silicon there is little tendency for FeO to build up again in the metal if the heat is tapped in 15 min. or thereabouts, depending on the carbon content and the condition of the slag. In this practice carbon and manganese efficiencies of 70 and 80 per cent were usual. About 0.012 per cent phosphorus reverts to the metal and about 0.003 per cent sulphur is eliminated by the fluxing action of the fluid manganese silicates formed.

In discussing the work, W. H. Ballantyne, open-hearth superintendent, Jones & Laughlin Steel Corp., Pittsburgh, emphasized the importance of knowing the minimum time for holding a heat before tapping. W. J. Reagan, assistant open-hearth superintendent, Edgewater Steel Co., discussed the application of manganese-silicon deoxidizers in making high-carbon steel. Further discussion was given by J. H. Nead, chief metallurgist, and T. M. Washburn, metallurgist, Inland Steel Co., Chicago.

Physical Properties as Related to Furnace Manipulation

Correlation of furnace practice to physical properties of the finished steel represented the keynote of the final group of problems. M. W. Lightner summarized the results reported in Bulletin 59 on the transverse impact strength of plain carbon, normalized steels. Relationships established between ferrite content, solution manganese, and phosphorus content with the impact strength permitted calcu-

lations of the expected values of the impact strength, deviations from which caused by excessive banding or inclusion segregations could be readily detected. Inclusions seem not to affect the impact strength of normalized steels unless they are present as excessive segregations, especially of alumina or aluminum silicate, directly under the notch in the test piece.

Study of factors affecting quench-aging and strain-aging of steels, undertaken as an indication of the influence of deoxidation and furnace manipulation, was outlined by Dr. Herty. In killed steels the amount of aging decreases with increasing carbon. There is far less aging in killed than in rimmed steels. Aluminum-killed steels age-harden less than silicon-killed. Wide variations in aging were noted in semi-killed steels, indicating that both carbon and oxygen have pronounced influence on quench-aging. The nitrogen content was so low that no general correlation between its concentration and aging were apparent. It is hoped to secure some results on strain-aging soon.

Discussing the difficulty of proving inclusions generally detrimental, Howard Scott, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., mentioned specific instances, such as the production of highly-polished surfaces and the heavy stressing of hardened steel, where inclusions are definitely harmful. Expressing the hope that the impact studies would be extended to include the influence of special elements, H. J. French, in charge of alloy steel and iron development, International Nickel Co., New York, suggested the influence of deoxidation products on the ferrite precipitation. Discussion by W. G. Hildorf, metallurgist, Timken Steel & Tube Co., Canton, Ohio, emphasized the importance of adequate control of variables in impact tests. Practical importance of aging of the above sort in the production of deep-drawing materials was emphasized by J. D. Gold, chief metallurgist, Weirton Steel Co., Weirton, W. Va.

Outlook for the Steel Industry

At the evening program, following a dinner at Hotel Schenley, attended by about 180 persons, Dr. Thomas S. Baker, president, Carnegie Institute of Technology, acting as toastmaster, introduced J. H. Van Deventer, editor, *THE IRON AGE*, New York, who delivered the principal address on the subject, "The Outlook for the Steel Industry."

Voicing the hope that the administration of the research might some day be vested in a central agency, Dr. F. N. Speller, chairman of the Metallurgical Advisory Board, called attention to the effectual prosecution of the work during the uncertainties of the past year. Prospect of further continuance of the investigations was evidenced by the announcement of the unanimous decision of the board that the work was worthwhile.

Importers Refute Charges of Dumping of Foreign Steel

At Washington Hearing It Is Stated That American Producers Sell Abroad at Less Than Home Market Prices

WASHINGTON, Nov. 1. — Importers of steel protested strongly last Thursday before Acting Commissioner of Customs Frank Dow against the application of bond requirements asked by the American Iron and Steel Institute in connection with the latter's charge of dumping of foreign steel.

The objection was pointedly made against application of section 623 of the Hawley-Smoot tariff act. Under this provision the Secretary of the Treasury is empowered to demand bonds of importers before permitting release of entries.

H. M. Wallace, of the New York law firm of Curry, Lane & Wallace, appearing for importers, declared that application of this provision would absolutely destroy the business of importers. It was his contention that the provision is intended to cover fraud cases whereas it is conceded that fraud is not involved in the charges of dumping of steel. He declared that the pending orders applying to importers of steel channels from the Saar Basin and of wire netting from Germany have killed the American market for these products from those sections.

Mr. Wallace said importers had no objection to application of bond requirements under the anti-dumping act. On the contrary, he stated, they would willingly give bonds under this act to the point required by the Government to protect its revenue. It was stated that these bonds vary, and run from 5 to 10 per cent or more of the value, depending upon the extent of the alleged dumping.

Supporting views of importers, he asserted that under section 623 security companies demand cash or Liberty bonds as collateral to cover 150 per cent of the invoice value. It was repeatedly claimed that such an exaction was out of the question and would mean an embargo on imports and destruction of the business of importers.

Declare Imports are Only 1.2 Per Cent of Domestic Production

Importers of steel derided the idea that imports are injuring the domestic industry. Imports for the current year were said to be only 1.2 per cent of the production.

Sharp statements regarding alleged practices of the domestic manufacturers were made by importers. They declared that domestic mills are guilty of doing the very things

which they charge against importers. During the entire hearing, however, categorical denial of dumping was made generally only as it related to Belgium and Luxemburg. It was stated by several witnesses importing steel from Belgium and Luxemburg that it is not being sold in the American market at less than the home f. o. b. market levels. On products from other countries only one direct statement was made as to whether the steel is being dumped.

George E. Dix, representing the Steel Union Co., Inc., New York, who directed the hearing for importers and was the first witness, said that the Treasury Department is investigating the charge of dumping and that it would be discourteous to express his view.

Charges American Industry with Sales Abroad at Low Prices

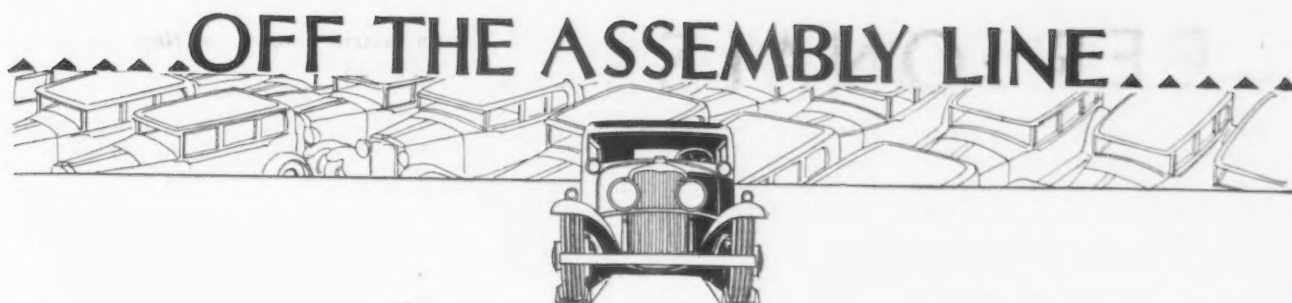
Evidence given the preceding week for the domestic industry was declared by Mr. Dix to be intended either to convey a false impression or to be misleading or was based on misinformation. At some length he charged domestic makers with unfair practices. He said that the domestic industry itself does not deny that it sells abroad at less than the United States market prices. Different companies were named as importers of iron ore, manganese ore and other raw materials and thus do not show, Mr. Dix said, the solicitude for American labor which they expressed at the hearing. He said that former President James A. Farrell of the United States Steel Corp. two years ago told the American Iron and Steel Institute that the trouble with the industry was not without but was within and had condemned price cutting and "other bad practices."

"The domestic industry has now appointed as head of the American Iron and Steel Institute a man whose integrity and independence of action cannot be questioned, Robert P. Lamont," said Mr. Dix. "He has a man-sized job."

Sale of American steel abroad at less than the domestic market levels, the small amount of imports as against domestic production and other points were made by Mr. Dix.

No Dumping by Belgium or Luxemburg is Assertion

Asserting that the imposition of bonds as required means the death of the importing industry, Mr. Dix said
(Concluded on page 716)



Automobile Output Slowly Gaining; Chevrolet to Build 110,000 Cars

DETROIT, Oct. 31.

AUTOMOBILE production continues slowly on the mend, and it now seems assured that November will bring the first upturn in assemblies since May. Motor car operations apparently reached their low point for the year during the first half of October. Since then the resumption of manufacture by Buick, Chevrolet and Plymouth has helped lift the industry out of the doldrums and the outlook is for a gradual increase in output from week to week in the final two months of 1932.

Chevrolet Has Ambitious Program

By far the most ambitious program from the standpoint of volume is that of the Chevrolet Motor Co. It is committed to an output of 110,000 cars between Nov. 1 and Feb. 1 and is now engaged in making some parts commitments on that basis. Its local plants have resumed work while its Saginaw foundry and Flint plant also are busy. Branch assembly plants will begin assembling 1933 cars about Nov. 15. This activity is proving to be a boon to steel mills which are sorely in need of tonnage. The foundry is running four days a week. As a matter of fact, it is understood that the various Chevrolet divisions have been given a schedule of 60,000 units for the remainder of the year with the privilege of producing the required volume as they see fit, taking into consideration the method most helpful to employees as well as economy of operation. Chevrolet's plans for making a light car designed solely for cheap transportation in addition to its regular line are unaltered. However, it is believed that the newcomer will bear a name other than Chevrolet.

New Plymouth to Be Shown Soon

At the end of the past week Plymouth was producing about 200 cars a day of its new models which are to be revealed to the public on or near Nov. 17. Within a short time it is expected that assemblies will have

Chevrolet will manufacture 110,000 cars between Nov. 1 and Feb. 1.

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Plymouth shortly will be turning out 1000 cars a day, five days a week.

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Chevrolet is making Pontiac's castings and forgings.

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been increased to 1000 a day, five days a week. The ultimate goal, which is not far distant, is 1000 a day. Orders on hand from dealers are now 19,214. The effect of the Plymouth resumption is being felt not only in orders for steel from the Chrysler Corp., but also in an increasing volume of steel releases from the Briggs Mfg. Co., which makes Plymouth bodies. Incidentally, some of the Plymouth body stampings formerly manufactured at the Briggs plant are being turned out at the Dodge plant and trucked to Briggs for assembly. This is another manifestation of the determination of the Chrysler Corp. to make just as many parts of its cars as possible in its own plants.

Ford Operations Unchanged

The Ford Motor Co. continues to operate its Rouge plant an average of five days a week, turning out about 1000 units a day. It is understood that its production will remain close to the current level the remainder of the year. This means that its output in the fourth quarter will total about 60,000 units. It has been revealed that scrap losses in the foundry in casting the V-eight motor have been reduced to less than 1 per cent, an almost incredibly low figure in view of the difficulty of the job. Establishment in Buffalo of the first of a group of its own retail sales and service stations is a noteworthy step taken by the Ford company the past

week. With general business conditions in mind, Ford is setting up these stations to supplement but not to replace present dealer representation in the larger cities where such action is necessary.

Pontiac Production Begun

Production has begun on the new Pontiac car. The straight-eight cylinder blocks are being cast in the Chevrolet foundry at Saginaw and the forgings are being made at Chevrolet's local forge plant. In fact, practically all of the cast parts for the Pontiac car which formerly were made in the Pontiac (old Oakland) foundry are being manufactured at Saginaw. Built in the days when the industry was expanding at a swift rate, the Pontiac foundry has been idle for months and will not be reopened until the time arrives when Chevrolet's Saginaw foundry is unable to handle Pontiac's work.

Oldsmobile Buys Steel

Oldsmobile has made its first purchase of steel for its new cars, with less than 10,000 units scheduled for production this year. Willys-Overland is placing high hopes on a newly designed car which it will begin to make late in November. Auburn's plans are shrouded in secrecy, but it is known that the Lycoming Mfg. Co. will not begin to manufacture new Auburn motors for perhaps another 30 days. This indicates that the 1933 Auburn will probably not make its debut until near show time. Studebaker and Nash likewise are expected to wait until the year-end to display their products. Only minor changes, in the way of additional refinements, are anticipated in the new Packard and Cadillac cars.

It is reported that on some stampings for the new Continental car as many as 33 suppliers have submitted bids and that the figures named are in numerous cases incredibly low. It is inevitable that these suppliers, if they get the business, will bring pressure to bear for lower steel prices.

PERSONALS

EUGENE H. HEALD has been made vice-president and general contracting manager for the American Bridge Co., Pittsburgh, succeeding the late Arthur L. Davis. He is a native of Chicago and a graduate of the University of Wisconsin, and entered the structural steel business in the old Cassig plant of the American Bridge Co. at Chicago. He was subsequently contracting manager in charge of the company's former New Orleans office, and later served in a similar capacity at Richmond, Va. When the latter office was closed he went to New York as a contracting manager, but later was transferred to Chicago as assistant division contracting manager for the Western district. He was then named division contracting manager at Chicago, a position he held until his transfer to Pittsburgh last year as assistant general contracting manager.

W. S. SHIPLEY, president of the York Ice Machinery Corp., York, Pa., has been elected president of the Refrigerating Machinery Association.

L. A. QUINN has been appointed Southeastern representative, with headquarters at 28 South Twentieth Street, Birmingham, for the Heppenstall Co., Pittsburgh.

LEXWELL S. LOW, formerly superintendent of the Brooklyn plant of the Permutit Co., New York, has joined the welding sales division of David H. Smith & Sons, Inc., Brooklyn. He has been assigned to the Long Island territory, with headquarters at Mineola.

L. C. STOWELL, president, Dictaphone Corp., Bridgeport, Conn., has been elected president of the Equipment Manufacturers' Institute.

GEORGE W. DYER has been made president of Dyer Brothers, Golden Gate Iron Works, San Francisco, succeeding the late Richard W. Dyer.

P. C. CLARKE, formerly in charge of spring design at the Philadelphia works of the General Electric Co., has been placed in charge of the engineering and research departments of the Hunter Pressed Steel Co., Lansdale, Pa.

S. T. JOHNSTON, for many years vice-president of the S. Obermayer Co., Chicago, maker of foundry supplies, has retired from active service with that company. A native of Scotland, Mr. Johnston came to this country in 1889. His first connection was with the Detroit Car Wheel Co.

and later with the Detroit Foundry Equipment Co. Mr. Johnston was identified with the Whiting Corp. for 10 years prior to his connection with the S. Obermayer Co. He will continue as president of the Standard Sand & Machine Co., Chicago.

J. FRANK ROGERS, consulting engineer of the Wellman Engineering Co., for the past three years and formerly manager of its gas producer division, has been reappointed as manager of this division.

HAZEN S. CARSON, who has been associated with the Buick Motor Co., Flint, Mich., for 16 years, 10 of which in the capacity of steel buyer, has resigned. He has not announced his plans for the future.

C. S. WAGNER has been appointed sales manager, National Equipment Corp., Milwaukee, the main unit of which is the Koehring Co., manufacturing gasoline-powered excavators, hoists, concrete mixers, paving units, etc. Mr. Wagner formerly was sales manager and later president, Insley Mfg. Co., Indianapolis, at one time a member of the National Equipment group.

N. G. SYMONDS has been appointed vice-president in charge of sales for the Westinghouse Electric & Mfg. Co., with headquarters in East Pittsburgh. Mr. Symonds, who is a Chicago official of the firm, went there in 1905. In 1921 he was made Northwestern district manager and in 1931 he was made commercial vice-president of the company.

FRASER JEFFREY, electrical engineer, Allis-Chalmers Mfg. Co., Milwaukee, has been elected president, Engineers' Society of Milwaukee. He succeeds HARRY SLOAN, construction engineer, Vilter Mfg. Co. WILLIAM D. BLISS, president, Bliss Brothers Tool & Die Co., has been elected vice-president.

CHAUNCEY P. ROSS, assistant general manager; J. E. DELONG, sales manager; J. B. FISHER, chief engineer, and ANDREW S. CRONK, purchasing manager, Waukesha Motors Co., Waukesha, Wis., have been elected directors of the company, which has increased the number of directors from five to eight to make operative a general managers' committee which will take complete charge of operations at the plant during the absence, illness or death of the president.

THOMAS I. S. BOAK, formerly works manager of Goulds Pumps, Inc., Seneca Falls, N. Y., has joined the

Western Cartridge Co., at the New Haven, Conn., plant.

W. A. TAYLOR has been appointed division manager in charge of the Chicago office of the A. M. Byers Co., Pittsburgh, according to an announcement by H. W. RINEARSON, vice-president in charge of sales. Mr. Taylor was formerly assistant manager and succeeds M. G. HENDERSON, who has resigned.

ROY F. KOSTER has joined the Los Angeles Mfg. Co. in charge of sales of welded steel pipe, casing, tanks and general fabricated plate work. The company is affiliated with the Arizona Steel Pipe & Tank Co., Phoenix, Ariz., and the Vincent Mfg. Co., Santa Ana, Cal. Mr. Koster was for 20 years in charge of the steel pipe department of the Baker Iron Works, at Los Angeles, and has since been with the Western Pipe & Steel Co., and Johns-Manville Corp.

H. A. LOMAX, formerly vice-president of the Continental Steel Roll & Foundry Co., Chicago, has been named manager of the roll department of the Pittsburgh Steel Foundry Corp., Glassport, Pa. The company, which has formerly manufactured steel rolls in a small way, is extending its products to include iron, steel and alloy steel rolls.

FRED C. ARCHER, formerly president of the company of the same name, has been appointed Philadelphia district manager, with offices at 401 North Broad Street, by the Lincoln Electric Co., Cleveland. Before going into business for himself in 1925, he was employed by the Kelly-Springfield Co. and the White Motor Co.

GLENN E. WEIST, at one time sales engineer with the Milwaukee electric hoist division of the Harnischfeger Corp., Milwaukee, has been placed in charge of engineering by the Kron Co., Bridgeport, Conn., maker of industrial scales. He is a graduate of Purdue University.

L. L. KNOX has returned as special representative to the Pressed Steel Car Co., McKees Rocks, Pa., to develop the sale of special products such as water-cooled furnace parts and bridge railings. He has been identified with a number of steel companies in the Pittsburgh district and has had extensive experience in the manufacture of furnaces and furnace equipment. In 1911 he organized the Knox Pressed & Welded Steel Co., which was later merged with the Blaw-Knox Co.

C. A. PEARSON has been appointed national supervisor of commercial sales for the York Ice Machinery Corp., York, Pa. He first became identified with the refrigeration industry in 1919, with the Isko Co.,

Chicago. A few years later he became sales engineer, then assistant sales manager and later sales manager for the General Refrigeration Co. In 1927, Mr. Pearson was made Eastern sales manager and manager of the New York office.

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DR. WILLIS RODNEY WHITNEY, organizer and for 32 years director of the research laboratory of the General Electric Co., retired from that position owing to poor health on Nov. 1. He was succeeded by DR. WILLIAM DAVID COOLIDGE, senior associate director of the laboratory. Dr. Whitney continues as vice-president in general charge of research.

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WALTER GEIST, assistant manager, milling machinery department, including the Tex-rope drive division, Allis-Chalmers Mfg. Co., Milwaukee, is spending three months in Europe studying conditions and visiting the company's manufacturing and sales organizations in England, France, Germany, Italy and other countries.

Gray Iron Institute to Meet on Nov. 17

A meeting of executives of gray iron foundries will be held under the auspices of the Gray Iron Institute at the Waldorf-Astoria Hotel, New York, Nov. 17. Recent activities of the institute will be reviewed. These include completion of specifications for different types of castings, broadening of cost work and new developments in merchandising activity. The insurance committee of the institute has completed arrangements for a reciprocal plan of handling fire insurance, which will be explained. The program will include an address by a business leader whose name has not yet been announced. Executives of foundries not members of the institute are invited to attend the meeting.

Acetylene Association to Meet in Philadelphia

A three-act industrial drama portraying the technical and practical factors of plant rehabilitation under today's economic conditions will be a feature of the International Acetylene Association's annual convention, which will be held at the Penn Athletic Club, Philadelphia, Nov. 16-18. This dramatic presentation is planned for the evening of Nov. 16, and Prof. Frank P. McKibben, consulting engineer and president of the American Welding Society, will preside. A number of technical sessions, with addresses by scientific and engineering authorities, has been arranged for the convention. T. C. Fetherston, Linde Air Products Co., 205 East Forty-second Street, New York, is chairman of the program committee.

OBITUARY

BURTON L. VERNER, past-president of the Chicago Purchasing Agents Association, died on Oct. 23 after a long illness. Mr. Verner was, for a number of years, assistant purchasing agent at Chicago for the former Republic Iron & Steel Co. Later he was connected with the Highland Iron & Steel Co. and was purchasing agent for the Interstate Iron & Steel Co. when it became a part of the Republic Steel Corp. He then became connected with the Empire Steel Corp. and later established a scrap brokerage office at Chicago, which he closed because of failing health.

♦ ♦ ♦
MYER BLOCK one of the first sheet metal manufacturers, in Chicago and founder of M. Block & Sons, died on Oct. 28 of heart disease. He was born in Germany and went to Chicago 60 years ago. He retired from active business about 10 years ago.

♦ ♦ ♦
EUGENE I. BLOUNT, treasurer of the J. G. Blount Co., Everett, Mass., died suddenly on Oct. 17, while in a boat at his summer home at Melvin Village, N. H. Mr. Blount, a native of Canada, was 78 years old. When a young man he went to Gardner, Mass., and manufactured a door check, which he later sold to Yale & Towne Mfg. Co. About 40 years ago he and his brother, JOHN GARDNER BLOUNT, moved to Everett and engaged in the manufacture of machine tools. Mr. Blount was treasurer of the concern, his brother, president, and Mr. Blount's son, HAROLD NICHOLSON BLOUNT, sales manager.

♦ ♦ ♦
CLARENCE E. FOWLER, for a number of years manager of the Toronto sales office of the Independent Pneumatic Tool Co., Chicago, died on Oct. 15 as the result of wounds received while hunting.

♦ ♦ ♦
CHARLES S. PROUDFOOT, general manager of the Niagara Falls, N. Y., plant of the Vanadium Corp. of America, died Oct. 29, following an emergency operation. He was born at Homestead, Pa., 55 years ago, and prior to becoming affiliated with the Vanadium Corp. of America in 1925 was the electrical engineer of the Johnstown, Pa., plant of the Bethlehem Steel Corp. He was a past-president of the Association of Iron and Steel Works Electrical Engineers.

♦ ♦ ♦
S. COLLIER SMITH, president and general manager of the Quickwork Co., St. Marys, Ohio, died on Sept. 16.

JOHN ROCKE, formerly chairman of the board of the Meadows Mfg. Co., Bloomington, Ill., manufacturer of washing machines, died at a hospital at that city on Oct. 18, aged 62 years.

♦ ♦ ♦
J. J. GILMORE, who retired recently as Southern sales manager of the American Steel & Wire Co., died at Birmingham on Oct. 24. He had been identified with the company for more than 40 years.

♦ ♦ ♦
RUDOLPH FREDERIC SCHUCHARDT, chief electrical engineer for the Commonwealth Edison Co., died Oct. 25, aged 56 years. He was president of the American Institute of Electrical Engineers in 1928 and 1929, and was a delegate to the World Engineering Congress in Japan. Mr. Schuchardt was graduated from the University of Wisconsin and shortly afterward went to work for the Edison company. He was made electrical engineer of the organization in 1909. He was a former chairman of the public affairs committee of the American Engineering Council and former chairman of the Great Lakes district power survey.

♦ ♦ ♦
THOMAS W. SIMPERS, for many years Philadelphia district sales manager of the American Sheet & Tin Plate Co., died at his home at Swarthmore, Pa., on Oct. 24 after a lingering illness. Mr. Simpser's career in the steel industry started with the Standard Iron Co., Bridgeport, Ohio, in 1888. In April, 1891, he became sales agent for the Aetna-Standard Iron & Steel Co. in Philadelphia, and continued as manager of sales of the American Sheet & Tin Plate Co. until June, 1931, when he retired after 43 years of service.

♦ ♦ ♦
RICHARD W. DYER, founder of Dyer Brothers, Golden Gate Iron Works, San Francisco, in 1902 and one of the leading fabricators of California for many years, died suddenly at his San Francisco home on Oct. 19, aged 70 years.

Bar Iron Wages Advanced

Bar iron wages for the November-December period will be advanced 25c. to \$9.30 a ton. Examination of the books of mills working in agreement with the Amalgamated Association of Iron, Steel and Tin Workers and the Western Bar Iron Association, disclosed an average sales price in September and October of 1.50c. per lb., which was an advance of 5c. per 100 lb. over the July-August period.

... LETTERS TO THE EDITOR ...

New Needs for Steel Continue to Arise

Editor, The Iron Age:

As indicated in your article of Sept. 15, it is evident that consumption of iron and steel products per capita has been declining. It is also an established fact that population is not growing anything like as rapidly as it did one or two decades ago.

Your inquiry, "Must the steel industry accustom itself to an annual increase of only 300,000 tons, or can it, by addressing itself to such activities as market research, lift the rate of progress more nearly to what used to obtain?" is therefore very pertinent.

Therefore, unless we believe that iron and steel products have reached their maximum of adaptation and of service, it would seem too logical to require argument that market research and trade extension are paramount problems.

No material known to civilization has ever shown such remarkable adaptation to so many practical, technical and exacting uses as has iron and steel. Its adaptations are seemingly limitless, as it is constantly serving humanity in some new way.

To assume that new needs and new uses are not going to continue to arise in the future as in the past is contrary to fact and to our daily experiences. Its great strength in comparatively light sections, its marvelous workability, makes it the servant of the inventor, the developer and the builder.

Iron and steel products get their great versatility from the fact that quality is not static. The chemist and the treatment specialist are constantly producing new mixtures and new and difficult grades of material to meet the need of some new use or application. There is absolutely no limit to the adaptability of iron and steel and their alloys.

If man wants to travel to the moon, as he is now definitely planning to do, he must not only have some new application of power, but he must have special steels to stand the strain of compulsion and travel. Every time speed in transportation, on the earth, in the air, on or under the water is desired, a new steel must be produced.

Man may temporarily lose his courage in times of business stagnation, but inventive genius cannot be checked. Like evolution, it moves straight ahead continuously, but much faster.

We have created marvelous tools and equipment for efficient produc-

tion. Adversity has lowered costs of production as no other influence has ever done. We need only to move sensibly, to control and stabilize our activities, and to put our surplus energies back of market research and development of new products, and our adventures of the past will only mark a beginning of the accomplishments of the future.

GEORGE M. VERITY,
Chairman of the Board,
American Rolling Mill Co.
Middletown, Ohio.

Junking Obsolete Practices

Editor, The Iron Age:

Your editorial on obsolescence in the Sept. 22 issue of *THE IRON AGE* should be carefully read by all those men who are responsible for the operation of industrial plants, especially steel plants. You are right in saying that "obsolescence of plant and production equipment cannot be defined by age"; many times it is only the method, which may be even older than the equipment, that has become obsolete.

Much of the practice in our steel plants and coal mines was built up around custom, and that is one reason why some of our equipment has apparently, but not actually, become obsolete. It is not necessary to have a five-million-dollar blast furnace in order to get cheaper pig iron; it is not necessary to enlarge big hot-blast stoves in order to get higher blast temperatures; it is not always necessary to get more floor space because the production is to be increased; there is no need to junk a two-high mill just because the labor cost is high.

Before an executive decides to scrap a plant or equipment he should have the facts covering the actual cost of his product compared with what the "ideal" cost of his product should be under actual prices, conditions and equipment. A comparison of these actual costs with the ideal costs would show whether the management or the operating man was to blame for the excess cost (see page 11, *THE IRON AGE*, July 7, 1932), and whether or not there are defects in plant construction, equipment or practice.

You give as an example of quick obsolescence the case of a machine much better than the one it displaces, yet obsolete in the terms of possibilities of another machine unknown to the executive. In your Sept. 22 issue are the records of many instances where a new application of a long-known chemical or physical action has prevented some equipment from be-

ing replaced, but has made obsolete some old custom-built practice.

Your "Symposium of Salient Developments" is full of guide posts for the junking of obsolete practice and for the prevention of obsolescence of much costly steel plant equipment.

Ralph H. Sweetser
17 Battery Place, New York

Russian Progress

Editor, The Iron Age:

Glorification of the few great engineering works of the Soviet Republic, built at an outlay of hundreds of millions of dollars under the direction of foreign engineers, takes up pages of U.S.S.R. textbooks and thereby is grained into the thinking of Russian school-going youth. Apparently those who govern Russia reason that pride in these achievements will thus become the outlet for the religious and patriotic emotions of the oncoming generation. Celebrations like the recent one at the opening of the mammoth Dneiperstroï usher in the real test of the Soviet's capacity to make use of the giant machine it has bought.

In his illuminating article in *THE IRON AGE* of Oct. 13, Homer S. Tre-cartin, who for more than a year was consulting engineer for the Russian State in the establishment of its huge ball and roller bearing factory, points out that building with foreign plans and material is one thing, while operating is quite another. "I am convinced," he says, "that not in this generation certainly, and probably not in the one to follow, will Russia arrive at any successful degree of management and operation."

What Mr. Tre-cartin cites in detail of the disastrous decline in output and in morale that followed the taking over by the Soviet State of the Swedish concession at Moscow for the manufacture of ball bearings is more conclusive than volumes of testimony from specialists in social and economic travel-study. The evident friendliness and fairness of the author's attitude add weight to his comment. Of special significance is his statement that the workers had been stable under the management of the Swedish firm "but had become dissatisfied under the management of their own 'workers' state.'" Their wages had been reduced, their food was scarcer and poorer and their housing more and more crowded.

Not rapid but slow will be the rate of Russia's progress toward successful plant operation, particularly the handling of workers. In mechanical products it will be many years before she will be able to provide for her own needs. That means that with proper cultivation her trade with our metalworking industries should long continue. Thus far her preference for American tools and machinery has not been concealed.

ANDREW I. FISKE.

• • EDITORIAL COMMENT • •

The Rail Price— a Lesson for the Steel Industry

lic. During the past year or more they have remained silent while newspaper and magazine writers and others who in all probability know little or nothing about the making of steel and less about the quality of the various steel products have set up a clamor for lower rail prices, which was finally answered by the rail producers in the recent reduction from \$43 to \$40 a ton.

Most of the protest from those uninformed about steel was due to the mere fact that the rail price had remained unchanged for 10 years at \$43 a ton, while other steel prices had declined. And in the many comments that have appeared in the public press there has been no thought given to the fact that during the ten-year period of steady rail prices many steel products had for a large part of the time been sold for more than the rail price, including billets on several occasions, and even today rails are lower in price than some other steel products that present fewer technical problems in their manufacture.

Railroads have not officially joined in the public protest against a stabilized rail price, possibly because they know that the charges for their own services, if considered solely from the standpoint of public interest, are too high, and the carriers are in a doubly vulnerable position in this respect because of the large revenues they obtain from the steel companies, which uttered no serious protest against the recent raising of freight rates.

It is not surprising that much of the public interest in the rail price should have come about because that price has been stabilized for ten years. Even the Department of Justice joined in with an investigation on the probable ground that an unchanged price for so long a period connoted an agreement among producers in restraint of free competition. Under our laws the question of whether a price is a fair and reasonable one has no standing, yet there is nothing in the law of common sense that makes a stabilized price inimical to public interest if it is fair to the buyer and does not yield exorbitant profits to the producer.

Intimations have come to THE IRON AGE from railroad sources that the \$3 a ton reduction in the price of rails is not sufficient. Here is where the rail makers presumably have failed to acquaint even their railroad customers with the facts of the situation. Assuming that the current level of 1.60c. a lb., Pittsburgh, is a fair one for bars—and no particular protest has been raised against it—then a price of \$40 a gross ton for rails is not excessive and possibly is too low. An ordinary steel bar with the high carbon content called for in the standard A.R.A. specification for heavy rails would today cost 1.75c. a lb., Pittsburgh, as the extra for carbon (0.67 to 0.89 per cent is required in rails from 101 to 140 lb.) is 15c. per 100 lb., whereas the present rail price is 1.7857c. a lb., or only 71c. a net ton above bars of similar carbon content.

The rail makers have given little or no publicity to the rigid requirements in rail making, such as heavy

MAKERS of heavy rails have quite evidently overlooked an opportunity to "sell" the merits of their product not only to the railroads but to the general pub-

cropping, searching inspection and special testing. The rail maker must show the portion of the ingot from which the rail comes; top cuts are barred, thereby putting the rail maker in the position of the milk dealer who furnishes cream and no milk. For some years the Sperry device for detecting rail fissures has disclosed the slightest defects after the rail is in track—a rigid inspection that probably no other material furnished of carbon steel must meet. There is the well known fact also that every rail is marked with the maker's name and the month and year of manufacture, so that when a rail failure is later disclosed the rail must be replaced at the steel maker's expense.

These are facts about rails that the steel companies have not sufficiently stressed. It is little wonder that the public prints are filled with misleading "information" upon such an occasion as the recent change in the rail price. However, E. G. Grace, president of the Bethlehem Steel Corp., in a newspaper interview last Thursday impressed upon the reporters the large investment that the steel companies have tied up in rail-producing equipment and the technical advances in rail manufacture that have been made in recent years, but the reduction in the rail price was then an "old story" to the newspapers and Mr. Grace's statement did not receive the attention that might have been accorded it a week earlier.

Precision Enters the Foundry

THE amazing but logical steps which have been taken by the Ford Motor Co. to introduce precision work into the foundry, particularly into the making of cores for its V-eight cylinder blocks, is described elsewhere in this issue. The close tolerances required in the construction of cores, calling for the creation of new measuring instruments because none existed for this purpose, have introduced an element of precision workmanship never before attempted in foundry practice.

That this is not an isolated example to be divorced from general foundry processes, but may be a forerunner of a movement on the part of the foundry industry toward finer workmanship, is indicated by reports from Detroit. Another company there, the name of which cannot be mentioned, has recently put its foundry on a precision basis heretofore deemed impossible. This is the result of a decision made a year ago, and at the time judged drastic, to place in charge of the foundry a man whose entire experience had been in the tool room. The aim was to put the foundry on a precision basis comparable with that of the tool room, and this aim has since been achieved.

These are accomplishments which should give the foundry industry food for thought. They open the way to quality production at a minimum cost. They are a standing invitation to foundrymen to widen their markets by making products which previously have been manufactured by more precise methods and of other materials. They may even point the way toward a brighter day for an industry which has felt the full force of inter-industry competition combined with the economic illness of the times.

October Daily Pig Iron Output Gained 5.3 Per Cent

ESTIMATED production of coke pig iron in October was 644,787 gross tons, compared with the September figure of 592,589 tons. The gain in the daily output of October over September was 5.3 per cent, or from 19,753 to 20,800 tons. This is the first time since April, 1931, that there has been a consecutive gain in the daily output for two months.

There were 49 furnaces in operation on Nov. 1, compared with 47 on Oct. 1. Two furnaces were banked during Oc-

tober and four were blown in, making a net gain of two.

Furnaces blown in include: One Ohio furnace of Carnegie Steel Co., the Portsmouth furnace of the Wheeling Steel Corp., one Pioneer furnace of the Republic Steel Corp. and one furnace of the Sloss-Sheffield Steel & Iron Co. The Carnegie Steel Co. banked a Carrie furnace and the Shenango Furnace Co. banked a Shenango furnace.

Complete blast furnace data will be published next week.

E. G. Grace for Tariff Protection; Calls Foreign Steel "Real Menace"

THE Bethlehem Steel Corp., in its report for the third quarter made public on Oct. 27, showed its first loss on operations, amounting to \$541,756, against a profit on operations in the second quarter of \$271,174 and one of \$3,954,960 in the third quarter of 1931. After interest charges and provision for depletion and depreciation, the Bethlehem company's total deficit for the third quarter was \$5,425,724 against a loss of \$4,671,266 in the preceding quarter.

During the third quarter the company's operations averaged only 13.3 per cent of capacity compared with 18 per cent in the second quarter and 32 per cent in the third quarter of last year. Last week's operations were at about 15 per cent.

In an oral statement to the press, E. G. Grace, president, said that shipments of steel from Bethlehem plants have been at about an even rate during September and October, showing a moderate gain over those of the two preceding months. He called attention to the fact that current business is coming from miscellaneous sources without much support from the large consumers such as the railroads, the automobile industry and the building construction field. However, he thought that aid would come soon from building projects financed by the Reconstruction Finance Corporation. He would not be drawn into a prediction as to how well the steel industry might be able to do during the coming months.

On the question of foreign steel competition and the tariff Mr. Grace was outspoken. He declared that foreign steel is a "real menace" to the American steel industry and took a strong stand in favor of the continuance of a protective tariff policy for this country, which, he said, had fostered the growth of many of our in-

dustries. "Cancelling all the tariffs in the world would not end the depression," Mr. Grace remarked emphatically.

He called attention to the fact that, although European nations are shipping us steel, there is not one steel-producing nation in Europe to which the United States mills can sell steel. "We open our doors to foreign steel," said Mr. Grace, "although we have here at home as much steel-making capacity as all of the rest of the world put together."

In answer to a question, Mr. Grace said that Bethlehem has no intention of establishing a steel plant in Canada in view of the tariff walls raised in the Dominion against American steel and in favor of the British product.

Earnings of National Steel Corp. for 1932 are expected to exceed the dividend requirement of 75c. a share for the same period, Ernest T. Weir, chairman of the board, stated in announcing earnings equivalent to 7 cents a share for the quarter ended Sept. 30 and to 60.7 cents a share for the nine months. Earnings for the third quarter were \$155,075 after all charges and Federal tax. Earnings for the nine months were \$1,308,874 after all charges and Federal tax, comparing with \$3,774,610 or \$1.75 a share earned in the corresponding 1931 period.

Inland Steel Co. and subsidiaries for the quarter ended Sept. 30 report net loss, after interest, depreciation and other charges, of \$768,588, compared with net loss of \$619,982 in the preceding quarter.

Youngstown Sheet & Tube Co. and subsidiaries in the first nine months of this year sustained net loss of \$9,588,041, after depreciation, interest and other charges, compared with loss of \$3,504,245 last year. Net loss for the third quarter of 1932, after simi-

lar deductions, was \$3,241,444, against losses of \$3,288,861 in the preceding quarter and \$1,504,892 in the third quarter last year.

Wheeling Steel Corp., Wheeling, W. Va., in the quarter ended Sept. 30, had net loss after all charges of \$775,353, compared with \$718,927 in the corresponding 1931 quarter. Loss in nine months this year amounted to \$2,284,813, as compared with \$1,937,755 in the corresponding time last year.

R.F.C. Lends \$3,957,000 For New York Housing

WASHINGTON, Nov. 1.—The Reconstruction Finance Corporation today announced a loan of \$3,957,000 to the Hillside Housing Corp., New York, to be used for construction in the Bronx of a complete neighborhood unit of apartments to house 151 families. This project will call for important tonnages of steel and other materials.

New York is the only State with a regulatory housing law now in operation, and for this reason is the only State eligible at the present time to apply for loans under the terms of the relief act. Several other States are said to be planning legislative action looking toward construction of similar projects. Starrett Brothers & Eken, building contractors, are partners in the equity of the Hillside syndicate.

Approximately 12,000 tons of steel will be required for the construction of a highway toll bridge across the Hudson River at Catskill, midway between Poughkeepsie and Albany, for which the Reconstruction Finance Corporation today agreed to purchase \$3,400,000 in bonds of the New York State Bridge Authority. The agreement is conditional upon enactment by the State Legislature of certain amendments to the statute authorizing the construction of the bridge.

Fabricated Structural Steel Bookings Gain

WASHINGTON, Nov. 1.—Making a gain of 28,534 tons, or 40 per cent, bookings of fabricated structural steel in September reported to the Bureau of the Census aggregated 99,172 tons against 70,638 tons in August. In each month the reports were received from 258 establishments. The September bookings were the largest reported in a long period. Estimated orders in September were 111,200 tons, or 27.8 per cent of capacity, compared with 78,800 tons, or 19.7 per cent of capacity, in August, an increase of 32,400 tons, or 40 per cent.

Orders reported in nine months of 1932 were 612,631 tons against 1,478,398 tons in the corresponding period of last year. Estimated bookings were 676,400 tons and 1,583,200 tons respectively.

SUMMARY OF THE WEEK'S BUSINESS

Pig Iron Output Higher in October; Steel Ingot Production Gains

Pig Iron Increase 5.3 Per Cent Over September and 21.5 Over August—
Automobile Orders Aid Mills in Some Districts

WITH many buyers awaiting the outcome of the election before making further commitments, new steel business has declined; yet steel ingot production has gained a point from last week to 20 per cent of the country's capacity, mainly because of recent orders from the automobile industry. Pig iron output in October, figured on a daily basis, gained 5.3 per cent over that of September and last month's average was 21.5 per cent above the low point of August.

While steel and pig iron production is gathering momentum very slowly, the broad outlook is fairly encouraging for further moderate gains, considering that railroad equipment programs are becoming more numerous, that automobile production of new models is expanding and that some construction projects sponsored by the Reconstruction Finance Corporation will be affording mill rollings of steel by the end of the year. The R. F. C. has granted a loan of \$3,957,000 for a New York housing project and a loan of \$3,400,000 for a toll bridge over the Hudson River at Catskill, N. Y., which will require 12,000 tons of steel.

ALTHOUGH rail makers are disappointed by the indifferent response of the railroads to the recent reduction in the rail price, a situation due in part to stocks of rails that many of the carriers have not yet laid, there are indications that moderate-sized orders will be placed by the end of the year for spring delivery, and several Western roads may come into the market soon after the election. The Carnegie Steel Co.'s rail mill will be started this week on a limited schedule.

The aid that the railroads may give to steel business appears more promising for the immediate future in equipment building and repair programs. The Chicago Great Western has inquired for 200 freight cars and will eventually buy 500; the New York Central, whose supply of light cars has fallen short of increasing traffic requirements, will repair 13,000 box cars if an R. F. C. loan is granted; the Pennsylvania has distributed orders for about 12,000 tons of plates, shapes and bars and several thousand tons of other iron and steel materials for 1285 all-steel box cars it will build in its own shops; the Norfolk & Western has inquired for steel for the repair of 500 coal cars, and the Reading will place additional steel orders soon in continuance of a repair program inaugurated several weeks ago.

The automobile industry is slowly expanding production, and November probably will bring the first upturn since May. The Chevrolet company is committed to an output of 110,000 cars within the next

90 days regardless of retail market conditions. Plymouth's unfilled orders for new cars now total 19,214, and an output of 1000 a day five days a week will be attained soon. Recent steel releases by automobile companies have resulted in increased steel production at Cleveland and Detroit and in the Youngstown area, the only districts that have gained except Wheeling, where demand for tin plate bars has caused a stepping up of ingot output.

Pipe line laying, long quiescent, comes into the picture again through a contemplated gasoline line from Toledo, Ohio, to Detroit for the Hickok Oil & Gas Co. If the project is carried out, 80 miles of 6-in. steel pipe, 4000 to 5000 tons, will be required.

PIG iron production has gained for the second consecutive month, which has not happened since April, 1931. The October total was 644,787 tons, according to preliminary estimates gathered by telegraph on Nov 1, against 592,589 tons in September, or a daily rate last month of 20,800 tons compared with 19,753 tons in September, a gain of 5.3 per cent. There was a net gain of two furnaces during the month, 49 having been in blast on Nov. 1. Official statistics on steel ingot output for last month probably will show about a 10 per cent gain over September.

THERE are mixed developments in prices. Heavy melting steel scrap has declined at Pittsburgh, but is higher at Cleveland. THE IRON AGE scrap composite has declined to \$7.50, the lowest since August, but \$1.08 a ton above the minimum figure of this year. Following the recent reduction on heavy rails, tie plates have declined \$2 a ton. Sheet mill products are still weak, automobile body stock having dropped \$2 a ton to 2.55c. a lb., while cold-rolled strip steel has been strengthened, now being quoted at 2c. a lb., Pittsburgh or Cleveland. These products are not included in THE IRON AGE composite of finished steel prices, which is unchanged at 1.948c. a lb., while pig iron remains at \$13.59 a gross ton.

FURTHER rises in gold prices of Continental steel products lend interest to the efforts that are being made at Washington to check alleged dumping, with the possibility that American valuation may be used as a basis for assessing duties, a procedure that is permissible upon recommendation of the Tariff Commission. Despite the fact that the British market is virtually closed to Continental steel because of increased gold prices and depreciated sterling, European steel mills are booking an increasing amount of business both at home and abroad.

▲▲▲ A Comparison of Prices ▲▲▲

Market Prices at Date, and One Week, One Month and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

	Nov. 1, 1932	Oct. 25, 1932	Oct. 4, 1932	Nov. 2, 1931
<i>Per Gross Ton:</i>				
No. 2 fdy., Philadelphia.....	\$13.59	\$13.59	\$13.84	\$15.76
No. 2, Valley furnace.....	14.50	14.50	14.50	16.00
No. 2 Southern, Cin'ti.....	13.82	13.82	13.82	14.69
No. 2, Birmingham.....	11.00	11.00	11.00	12.00
No. 2 foundry, Chicago*.....	15.50	15.50	15.50	17.00
Basic, del'd eastern Pa.....	13.50	13.50	13.50	16.75
Basic, Valley furnace.....	13.50	13.50	13.50	15.00
Valley Bessemer, del'd P'gh..	16.89	16.89	16.89	18.26
Malleable, Chicago*.....	15.50	15.50	15.50	17.00
Malleable, Valley.....	14.50	14.50	14.50	16.50
L. S. charcoal, Chicago.....	23.17	23.17	23.17	25.04
Ferromanganese, seab'd car- lots.....	68.00	68.00	68.00	85.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Rails, Billets, etc.

<i>Per Gross Ton:</i>				
Rails, heavy, at mill.....	\$40.00	\$40.00	\$43.00	\$43.00
Light rails at mill.....	30.00	32.00	32.00	34.00
Rerolling billets, Pittsburgh..	26.00	26.00	26.00	29.00
Sheet bars, Pittsburgh.....	26.00	26.00	26.00	29.00
Slabs, Pittsburgh.....	26.00	26.00	26.00	29.00
Forging billets, Pittsburgh...	31.00	31.00	33.00	35.00
Wire rods, Pittsburgh.....	37.00	37.00	37.00	35.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	1.60	1.60	1.60	1.60

Finished Steel

<i>Per Lb. to Large Buyers:</i>				
Bars, Pittsburgh.....	1.60	1.60	1.60	1.60
Bars, Chicago.....	1.70	1.70	1.70	1.70
Bars, Cleveland.....	1.65	1.65	1.65	1.65
Bars, New York.....	1.95	1.95	1.95	1.93
Tank plates, Pittsburgh.....	1.60	1.60	1.60	1.60
Tank plates, Chicago.....	1.70	1.70	1.70	1.70
Tank plates, New York.....	1.898	1.898	1.898	1.88
Structural shapes, Pittsburgh..	1.60	1.60	1.60	1.60
Structural shapes, Chicago...	1.70	1.70	1.70	1.70
Structural shapes, New York...	1.86775	1.86775	1.86775	1.85 1/2
Cold-finished bars, Pittsburgh	1.70	1.70	1.70	2.10
Hot-rolled strips, Pittsburgh..	1.45	1.45	1.45	1.50
Cold-rolled strips, Pittsburgh.	2.00	1.90	1.90	2.05

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Finished Steel

	Nov. 1, 1932	Oct. 25, 1932	Oct. 4, 1932	Nov. 2, 1931
<i>Per Lb. to Large Buyers:</i>				
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.10	2.10	2.20	2.40
Hot-rolled annealed sheets, No. 24, Chicago dist. mill..	2.20	2.20	2.30	2.50
Sheets, galv., No. 24, P'gh...	2.85	2.85	2.85	2.90
Sheets, galv., No. 24, Chicago dist. mill.....	2.95	2.95	2.95	3.00
Hot-rolled sheets, No. 10, P'gh	1.55	1.55	1.55	1.70
Hot-rolled sheets, No. 10, Chi- cago dist. mill.....	1.65	1.65	1.65	1.80
Wire nails, Pittsburgh.....	1.95	1.95	1.95	1.90
Wire nails, Chicago dist. mill.	2.00	2.00	2.00	1.95
Plain wire, Pittsburgh.....	2.20	2.20	2.20	2.20
Plain wire, Chicago dist. mill	2.25	2.25	2.25	2.25
Barbed wire, galv., Pittsburgh	2.60	2.60	2.60	2.55
Barbed wire, galv., Chicago dist. mill.....	2.65	2.65	2.65	2.60
Tin plate, 100 lb. box, P'gh..	\$4.75	\$4.75	\$4.75	\$4.75

Old Material

<i>Per Gross Ton:</i>				
Heavy melting steel, P'gh....	\$9.25	\$9.50	\$9.75	\$10.12 1/2
Heavy melting steel, Phila...	7.25	7.25	7.25	8.00
Heavy melting steel, Ch'go...	6.00	6.00	6.00	8.00
Carwheels, Chicago.....	7.00	7.00	7.00	9.00
Carwheels, Philadelphia.....	9.50	9.50	10.00	11.50
No. 1 cast, Pittsburgh.....	10.00	10.00	10.00	10.00
No. 1 cast, Philadelphia.....	9.50	9.50	9.50	10.50
No. 1 cast, Ch'go (net ton)...	6.25	6.25	6.25	8.50
No. 1 RR. wrot., Phila.....	7.50	7.50	7.50	9.50
No. 1 RR. wrot., Ch'go (net)..	4.50	4.50	5.00	6.50

Coke, Connellsville

<i>Per Net Ton at Oven:</i>				
Furnace coke, prompt.....	\$1.75	\$1.75	\$2.00	\$2.40
Foundry coke, prompt.....	2.75	2.75	2.75	3.50

Metals

<i>Per Lb. to Large Buyers:</i>				
Lake copper, New York.....	5.25	5.75	6.25	7.37 1/2
Electrolytic copper, refinery..	5.00	5.25	6.00	6.75
Tin (Straits), New York.....	23.35	23.50	24.50	22.25
Zinc, East St. Louis.....	3.00	3.00	3.10	3.15
Zinc, New York.....	3.37	3.37	3.47	3.50
Lead, St. Louis.....	2.87 1/2	2.90	3.10	3.80
Lead, New York.....	3.00	3.00	3.25	4.00
Antimony (Asiatic), N. Y....	5.50	5.60	5.62 1/2	6.50

▲▲▲ The Iron Age Composite Prices ▲▲▲

Finished Steel

Nov. 1, 1932	1.948c. a Lb.
One week ago	1.948c.
One month ago	1.977c.
One year ago	2.008c.
Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products make 85 per cent of the United States output.	
	HIGH LOW
1932	1.977c., Oct. 4: 1.926c., Feb. 2
1931	2.037c., Jan. 13: 1.945c., Dec. 29
1930	2.273c., Jan. 7: 2.018c., Dec. 9
1929	2.317c., April 2: 2.273c., Oct. 29
1928	2.286c., Dec. 11: 2.217c., July 17
1927	2.402c., Jan. 4: 2.212c., Nov. 1

Pig Iron

\$13.59 a Gross Ton	
13.59	
13.64	
15.00	
Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	
HIGH	LOW
\$14.81, Jan. 5:	\$13.59, Oct. 25
15.90, Jan. 6:	14.79, Dec. 16
18.21, Jan. 7:	15.90, Dec. 16
18.71, May 14:	18.21, Dec. 17
18.69, Nov. 27:	17.04, July 24
19.71, Jan. 4:	17.54, Nov. 1

Steel Scrap

\$7.50 a Gross Ton	
7.58	
7.67	
8.71	
Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.	
HIGH	LOW
\$8.50, Jan. 12:	\$6.42, July 5
11.33, Jan. 6:	8.50, Dec. 29
15.00, Feb. 18:	11.25, Dec. 9
17.58, Jan. 29:	14.08, Dec. 2
16.50, Dec. 31:	13.08, July 2
15.25, Jan. 11:	13.08, Nov. 22

Pittsburgh Steel Production Holds Despite Decline in New Business

PITTSBURGH, Nov. 1.—The local steel industry is able to maintain production schedules on most lines in spite of the fact that the past week has been extremely quiet. Election uncertainty is blamed for the halting of fall improvement. Considerable business is said to be held up awaiting the outcome of the vote.

Structural awards have been lighter in the last week, and sheet production has fallen off. Nevertheless, inquiry for structural steel and reinforcing bars is still coming out in fair volume, and the prospect for the placing of automotive tonnage during the month is expected to revive volume in sheets and strip.

Tin mill production is being maintained by work on anticipated tonnage, and schedules this week continue at about 45 per cent, in spite of the fact that one large mill in the district is not operating.

The local rail mill is resuming production in a limited way this week, but releases by the carriers have not been sufficient to promise a very long run. Steel for building cars by the Pennsylvania Railroad has been allocated, with a few Pittsburgh producers sharing. Approximately 12,000 tons of plates and shapes was involved. Otherwise railroad purchases have been meager, but further business is promised by application for a loan to finance car repairs by the New York Central.

Smaller consumers of steel are maintaining their requirements at the recent rate, which is sufficient to maintain slight operating schedules. Buying by jobbers has temporarily subsided.

Steel ingot production in the district is unchanged at 17 per cent of capacity, but activity at Youngstown has risen to 18 per cent. The Wheeling district is running at 35 to 40 per cent, an advance having been registered because of sustained demand for tin plate bars. Except for the changes mentioned above, finishing mill activity is just about holding its own.

Pipe production is probably the lowest of the leading products, but the market this week is featured by a prospective inquiry for ninety miles of 6-in. line pipe.

Finished steel prices are somewhat more unsettled, although many of the leading products are firm. The recent reduction in the rail price has been followed by a decline of \$2 a ton in tie plates. With the exception of

▲ ▲ ▲
Many steel buyers awaiting the results of election; hence new business has declined.

* * *
Ingot production at Pittsburgh maintained and moderate gains have occurred in Youngstown and Wheeling districts.

* * *
Heavy melting steel scrap lower on sale into consumption.

▼ ▼ ▼
spikes, which were dropped a few weeks ago, no other revisions in accessory quotations are reported. Weakness persists in some finishes of sheets, although galvanized are still very well held. Cold-rolled strip has firmed up sufficiently to warrant the quotation of a flat 2c., Pittsburgh.

Scrap prices have eased off following a fortnight of unsettlement.

Pig Iron

Foundry consumption is holding its own, but sales of pig iron have been light in the last week. Carload lots predominate, and most consumers are taking material only for immediate melting. Prices show no particular variation.

Semi-Finished Steel

Movement of billets, slabs and sheet bars is fairly well maintained, but has shown no improvement since the middle of the month. Prices are holding at \$26, Pittsburgh, while forging billets are quotable at \$31. Demand for wire rods has been somewhat better recently. The price is maintained at \$37, Pittsburgh or Cleveland.

Bars, Plates and Shapes

Structural awards have been rather light in the last week or two, but considerable pending work is soon to be placed. Reinforcing bar tonnage continues to hold up well for this season of the year, and two more Pennsylvania State Highway lettings are scheduled for November. The L. B. Foster Co., Pittsburgh, acting as agent for the Jones & Laughlin Steel Corp., has booked 3000 tons of sheet steel piling from the Vang Construction Co. for a lock and dam on the Allegheny River. Plates are slightly more active as a result of small releases from the railroads for car repairs. However, much of this tonnage is still to be placed, and inquiry is being constantly augmented. The New

York Central has applied for a loan from the Reconstruction Finance Corporation for the repair of cars, which is expected to develop several thousand tons of steel. No barge lettings are reported, and demand for tankage steel in the oil industry is very light. Merchant bars are quiet, although October movement has shown a comfortable increase over September. Alloy steel bars are particularly dull. Bars, plates and shapes are well maintained at 1.60c., Pittsburgh.

Belts, Nuts and Rivets

Shipments during October gained substantially over those of September, some makers reporting as much as a 25 per cent increase. Consequently, production is well sustained at 20 per cent of capacity. Prices are holding satisfactorily.

Tubular Goods

The Hickok Oil & Gas Co., a subsidiary of the Pure Oil Co., Chicago, is contemplating a gasoline carrying pipe line from Toledo to Detroit, which will require approximately 80 miles of 6-in. pipe. Although formal inquiry has not been issued, the project is expected to take from 4000 to 5000 tons of steel. Otherwise the pipe market is quiet, although releases continue to show improvement over the preceding month. Most of the gain is attributable to standard pipe, as oil country goods are very quiet, and there is little activity in other types of tubular material. Makers of commercial boiler tubes have adopted a new system of quantity differentials which is expected to clarify discounts. On lapweld and butt-weld pipe the flat discount adopted a few weeks ago is well maintained to small miscellaneous users.

Wire Products

Merchant wire products have been moving somewhat better, but jobbers are still hesitant about building up their stocks, and movement into consumption from such sources has hardly been up to expectations. Specifications from manufacturing consumers have increased slightly in the last month, but there is no demand from the automobile industry and bed manufacturers and other users of spring wire are not active. The price on manufacturers' wire is well maintained at 2.20c., Pittsburgh, while nails are holding at \$1.95 a keg.

Sheets

The decline in specifications which has been noticeable since the middle of October has now affected opera-

tions slightly, and the average for the industry is not above 22 per cent. Galvanized sheets are still in fair demand, but auto body material is dull, and the common finishes are hardly maintaining the average of September and early October. The railroads have ordered some sheet steel for car roofing, but not all the tonnage expected from this source has been placed. Agricultural implement makers are doing little buying, and demand from jobbers, which has been fairly good, has fallen off slightly.

Sheet prices are still weak, particularly on the grades taken by the automobile industry. Galvanized sheets are well maintained at 2.85c., Pittsburgh, but hot-rolled annealed are subject to shading, and the same condition holds true of light and heavy cold-rolled.

Tin Plate

With little business coming out for immediate rolling, the tin plate industry is leaning heavily upon anticipated tonnage, which has thus far maintained operations fairly well. The industry is still engaged at about 45 per cent of capacity, with one large interest running at an even better rate. Some of the smaller makers have not become very active on future tonnage, and one large plant in the district is inactive this week. An announcement of the 1933 price is expected by Nov. 15.

Strip Steel

While tonnage has fallen off slightly in the last week or two, October business ran considerably ahead of that of September, and the gain was recorded without much assistance from the automobile industry. With only a few of the large motor car builders taking steel, further improvement in strip trade may be expected this month, as the others go into production on the new models. The price on hot-rolled strip is holding at 1.45c. to 1.50c., Pittsburgh, and quotations of less than 2c., Pittsburgh or Cleveland, on cold-rolled strip have practically disappeared. While some contract tonnage at 1.90c. is yet to be shipped, the spot market may be considered to be 2c.

Coke and Coal

No change has occurred in this market in the last week, with demand light for practically all grades. The furnace quality is particularly quiet, and prices continue to be erratic. Coal is in better demand than was the case earlier in October, and consumption by railroads is still improving.

Rails and Track Accessories

No large inquiries for rails have appeared in this district, although the Delaware, Lackawanna & Western is reported to have closed on 4000 tons in the East. Other carriers are silent as to their future requirements, but the steel industry is still hopeful that

the recent price reduction may bring in some tonnage. The price on tie plates has also been reduced to \$35 a ton, Pittsburgh. No other changes in accessories are reported, except the \$4 a ton reduction in track spikes which came out several weeks ago. The local rail mill will resume production in a limited way this week.

Scrap

Purchase of 5000 to 6000 tons of heavy melting steel at \$9.50 has established the market at a range of \$9 to \$9.50. This represents a decline of 25c. a ton in the average price. Although hydraulic compressed sheets have been offered at \$9.25, no sales are reported. Activity is lacking in the other grades of scrap, and prices are holding in a nominal way. The November list of the Pennsylvania Railroad, closing Nov. 11, contains 32,700 tons, including 10,600 tons of No. 1 heavy melting steel and 8000 tons of rails.

Birmingham Ingot Production Lower

BIRMINGHAM, Nov. 1.—Pig iron buying remains largely on a spot basis and for early shipment. October shipments were slightly ahead of September's, but the gain was of little importance. Stove plants were the best source of business in October and continue in this position. Pipe plant melt is still disappointing. One large plant is completely idle this week, while another will operate one unit for three days. Los Angeles has placed about 6300 tons of pipe with Birmingham companies. No changes in furnace operations have taken place in the past three weeks, five furnaces being in blast. There was a gain of two during the past month. Quotations of \$11 for the Southern market and \$10 for the North are being maintained.

Steel

One steel company reports a gradual increase in tonnage since the middle of October, while another has experienced a slight recession. In no line is there an active demand. Business from the farm market has been tapering off since the latter part of September when cotton prices started downward. The seasonal demand for roofing sheets is about over. A fair amount of highway steel is being booked as road work gains in volume. Open-hearth operations continue to ease off. Last week five units were in operation, a loss of one as compared with the preceding week. Since the middle of October there has been a loss of three.

Scrap

Inquiries have been better in the last two weeks, but these have not yet produced business of importance. A small amount of contract tonnage is moving to pipe plants and blast furnaces. Prices are stationary.

Boston Pig Iron Trade Dull; Scrap Also Inactive

BOSTON, Nov. 1.—Pig iron buying is small and scattered, not having exceeded 500 tons in the past week. Aside from an inquiry for 100 tons and another for 50 tons, there is no prospective business. Foundries continue to specify against old contracts in moderate volume, but many are taking only truckloads at a time. Quite a few melters are still operating at capacity on oil burner castings. Dutch iron is still offered at prices well below those quoted for domestic and Indian brands, but there have been few takers recently.

Reduced prices on certain grades of scrap, recently put into effect, have dried up business. Stocks of scrap in manufacturers' hands are limited, and those in yards are by no means burdensome. Any improved demand, it is felt among brokers, will be quickly reflected in values.

Henry Disston & Son, Inc., Philadelphia, has sold 150 tons of manganese acid steel to the Springfield, Mass., armory at 3.98c. per lb.

Montgomery, Ward & Co. and Sears, Roebuck & Co. received fresh sizeable consignments of German barbed wire, galvanized wire, steel wire and wire nails through this port in the last half of October.

St. Louis Pig Iron Trade Spotty; Prices Steady

ST. LOUIS, Nov. 1.—Aside from stove manufacturers, whose melt is being well maintained, and a few jobbing foundries, little interest is being shown in pig iron in the St. Louis district. Prices are firm.

Steel

A canvass of the executive and purchasing offices of railroads centering here has revealed that the recent reduction in the price of rails will develop no immediate buying.

Ouilmepe Construction Co., Chicago, and Merritt-Chapman-Williams Corp., Duluth, are low and second low bidders respectively on the Government dam at Alma, Wis., requiring 600 tons of structural steel, 400 tons of reinforcing bars, 90,000 sq. ft. of sheet piling and 45 tons of steel castings.

Scrap

Sales of stove plate and machine shop turnings, although the tonnages were not large, were made at prices that caused dealers to advance their quotations 50c. a ton. Cast scrap is scarce and prices are firm. The Missouri Pacific, which recently sold 29 carloads of scrap, has offered another list of 18 carloads. Other lists: Pennsylvania, 34,000 tons, and St. Louis-San Francisco, 23 carloads.

Chicago Steel Market Featured By Inquiry For Freight Cars

CHICAGO, Nov. 1.—Changes in the local steel market amount only to moderate shifts in one direction or another with the aggregate tonnage about at the average of recent weeks. This is clearly indicated by ingot output, which still stands at about 18 per cent of district capacity.

New sales are less active as consumers weigh the probable effects of the coming election, but specifications remain about the same as in previous weeks. Demand for plates is sluggish, but has promise of betterment now that formal inquiries are out for 200 cars for the Chicago Great Western, which will soon enter the market for 300 additional cars.

Use of wire products is dropping rather sharply in rural districts, where new low prices for farm products have curtailed buying power. However, in industrial centers shipments show a moderate gain. Reinforcing bars are moving more slowly as road contractors stop work for the winter, but, on the other hand, there is still in evidence slow growth in use of bar mill products among small industries.

The rail market is still a puzzle. Several Western railroads have let it be known what their needs are, but actual purchases are being deferred until after election. The Union Pacific is putting men to work laying rails that had been taken on order early in the year. This is encouraging, as it indicates that surplus rails now in the hands of railroads are being put to use.

Prices for fabricated steel are again being hammered down and reinforcing bar quotations remain at the low of the year.

Pig Iron

October shipments of Northern foundry iron were nearly 50 per cent heavier than in September. However, the aggregate tonnage is still light. That the upward trend will continue in November is uncertain, though at the moment the outlook is bright. Charcoal iron shipments last month were the heaviest of the year.

Cast Iron Pipe

This market continues its listless course, and dealers see little hope for a change unless Federal funds can be made available for some of the municipal projects that are dependent upon them. While the number of jobs of this kind is not large, they seem to hold the key to a more active cast iron pipe market. Fond du Lac, Wis., has

▲▲▲
Chicago Great Western has inquired for 200 freight cars and will eventually buy total of 500.

* * *

Ingot production maintained at 18 per cent, though there have been some shifts in business.

* * *

New orders are less frequent, but specifications against contracts hold up fairly well.

* * *

Western railroads will not inquire for rails until after election.

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placed 1300 ft. of 12-in. pipe. Bids will be taken Nov. 15 at Wilmette, Ill., on a water plant that calls for 800 tons. Prices remain steady on a few scattered carlot orders.

Wire Products

The general level of demand is practically unchanged. October shipments gained only a small margin over the September volume. Releases by the manufacturing trade are reasonably steady, but reports from jobbers indicate considerable spottiness. In strictly rural districts jobbers find business is slower, reflecting the effects of lower prices for some farm products. Where jobbers have connections with light manufacturing there is a moderate growth in shipments. Winter weather in the Northwest is expected to check outdoor work.

Bolts, Nuts and Rivets

Demand for these commodities tapered near the end of the month, leaving the October volume near that of September. Prices for special bolts are under severe pressure.

Sheets

Output is well sustained at 20 per cent of hot mill capacity. Consumer interest lies principally in small lots and prompt delivery is invariably demanded. Price weakness continues to make itself felt. Tin mill black plate is now quoted at 2.40c. to 2.50c. a lb., Chicago mill, and weakness is apparent in heavy and light cold-rolled sheets. Competition to the southwest of Chicago is very keen, and prices in that direction are lower.

Structural Material

Fabricators have taken 3300 tons of miscellaneous bridge work for State highways. Old projects of this kind,

still before the trade, are quite numerous, but fresh inquiries are the lightest in several months. Railroad bridge work has come to an abrupt stop. Prices for fabricated materials are again being pressed downward and are at the low point of the year, with competition the keenest in months.

Plates

The Chicago Great Western has issued formal inquiries for 200 gondola cars and is expected to enter the market for 300 additional cars in accordance with its plans to buy 500. The cars now on inquiry will take about 2500 tons of steel. A few small tank orders have been placed; otherwise the plate market is dull.

Rails and Track Supplies

Winter weather in the Northwest is checking track work and as a result there is a drop in use of track accessories by some railroads.

Reinforcing Bars

Activity in this market has quieted down to highway bridge and culvert work. In Illinois all road slab work must cease with the first frost, but bridge and culvert construction can go on through the winter. Accordingly, shipments of road steel have tapered very sharply.

Bars

A moderate increase in use by automobile manufacturers and parts makers and the promise that barn equipment manufacturers may become more active before the end of November mark the only changes in the local bar market. The farm implement group is making no further headway with production, and it is still uncertain what course it will take during the remainder of this year.

Scrap

The situation with regard to water shipments of scrap from Chicago has suddenly changed. One cargo of heavy melting steel has already been shipped and 3500 tons is now being loaded for shipment to a Lake Erie user. This movement is important to the Chicago market for the reason that it removes dock accumulations which were in effect distress tonnage that had come on track and could not be placed with local mills and therefore had been put on docks for storage. The Wabash is offering 5000 cars to be wrecked. The stopping of wrecking operations has cut materially the available supply of cast wheels which recently have been moving in greater volume.

Pennsylvania Railroad Places Steel Tonnage For New Cars

Sharp Concessions Made on Plates—Orders Total From 12,000 to 18,000 Tons—Norfolk & Western to Repair Cars

PHILADELPHIA, Nov. 1.—The market here is confused over reports of the distribution of steel tonnage for the 1285 all-steel box cars that will be built by the Pennsylvania Railroad in its own shops. A central Pennsylvania mill is reported to have received the award of nearly all of the plates, about 8000 tons. Sharp concessions are said to have been made on the plates. Orders for shapes, bars and sheets were distributed among a number of mills. The total of the steel orders is variously estimated at from 12,000 to 18,000 tons. The Norfolk & Western will repair 500 freight cars and has inquired for about 1500 tons of plates.

The market generally remains quiet pending the outcome of the election. Orders for both pig iron and finished steel are being withheld awaiting the end of the political uncertainty. It is likely that October business, however, was slightly in excess of that in September.

Pig Iron

One furnace interest reports that sales are holding up and cover foundry grades chiefly with small lots of basic also moving. The market as a whole, however, is extremely dull. Prices are unchanged, but continue to show signs of an easier tone, due partially to imported material at low figures and also to small demand.

Plates, Shapes and Bars

There is no clear report as to the distribution of tonnage by the Pennsylvania Railroad for the 1285 all-steel box cars it is to build. The confusion centers chiefly about the plate distribution. The most persistent report is that a central Pennsylvania mill was given most, if not all the tonnage, the quantity of which likewise is variously estimated. Apparently the plate tonnage and sheets totaled about 8500 tons. The roof sheets, No. 11 gage, together with some other sheets, strips and some structural steel, are said to have gone to a West Virginia mill. A Youngstown, Ohio, maker was awarded 2000 doors, the sheets for which will be rolled by its parent company in that city. Approximately 1000 tons of sill section is said to have gone to a Pittsburgh mill, and about 1500 tons of structural shapes to an eastern Pennsylvania mill. The total shape requirements is placed at about 5000 tons. The castings were recently placed with an unnamed foundry. Other requirements include bars, airbrakes, draft gears and couplers. The Reading is expected

to distribute its remaining requirements, about 1800 tons of plates, this week.

Warehouse Business

Jobbers report that sales in October showed a mild increase and were the

largest in four months. Prices are unchanged.

Sheets

The market is quiet. Galvanized sheets are reported to be firmer at 2.85c., Pittsburgh, for No. 24 gage.

Scrap

Demand continues dull, with prices unchanged.

Imports

Imports at Philadelphia last week consisted of 4000 tons of chrome ore from Turkey and 15 tons of iron ore from England.

Continental Steel Prices Rise Further as Business Expands

Some Belgian Mills Now Quoting Eight to 10 Weeks' Delivery—British Steel Business Also Gaining

LONDON, ENGLAND, Oct. 31 (By Cable).—Pig iron business is dull, with export trade difficult to negotiate. Steel business, however, is improving because some mills are booking orders which previously went to the Continent. However, stocks of Continental material here are still ample to meet consumers' current needs. The British market is virtually closed to Continental steel because of increased gold prices and depreciated sterling.

Russia has bought 25,000 tons of British plates and 15,000 tons of German plates.

Tin plate is firm, with sales moderate, but there is good inquiry. Second-hands have sold at 15s. 10½d. per base box, f.o.b. works port, but makers are not pressing sales. Wasters are in strong demand for the Far East.

Continental, domestic and overseas steel demand is expanding and gold prices are still rising. Several Belgian works are now quoting eight to 10 weeks' delivery.

Vereinigte Stahlwerke and Ruhrstahl have lately engaged 3200 workers. Maximilianshutte is also reopening idle plants.

Cincinnati Pig Iron Trade Is Dull

CINCINNATI, Nov. 1.—Although some stove foundries have increased their melt, they are using additional scrap, so that pig iron consumption is barely affected. Orders for iron the past week did not exceed 500 tons, all in single car lots. A pre-election apathy has spread among the trade, and a tendency to await political results before making commitments is manifest. Current business is of an urgent character, representing the actual needs of melters.

Steel

Moderate automotive specifications for sheets and continued small orders from other sheet users are sustaining mill operations of a leading producer at better than 30 per cent of capacity.

Scrap

Small scrap orders are reported, but substantial business is lacking. Dealers' bids are unchanged.

British Prices, f.o.b. United Kingdom Ports

Per Gross Ton

Ferromanganese, export	£9			
Billets, open-hearth	£4 17s.	6d. to	£5 7s.	6d.
Black sheets, Japanese specifications	£10 15s.			
Tin plate, per base box	16s.	to	16s.	3d.
Steel bars, open-hearth	£7 17½s.	to	£8 7½s.	
Beams, open-hearth	£7 7½s.	to	£7 17½s.	
Channels, open-hearth	£7 12½s.	to	£8 2½s.	
Angles, open-hearth	£7 7½s.	to	£7 17½s.	
Black sheets, No. 24 gage	£8 5s.			
Galvanized sheets, No. 24 gage	£10 15s.			

Continental Prices, f.o.b. Continental Ports

Per Metric Ton, Gold £ at \$4.86

Billets, Thomas	£2 3s.			
Wire rods, No. 5 B.W.G.	£4 10s.			
Black sheets, No. 31 gage, Japanese	£11 5s.			
Steel bars, merchant	£2 17s.			
Beams, Thomas	£2 7s.	6d.		
Angles, Thomas, 4-in. and larger	£2 16s.			
Angles, small	£2 17s.			
Hoops and strip steel over 6-in. base	£3 5s.	to	£3 7s.	6d.
Wire, plain, No. 8	£5 7s.	6d.		
Wire nails	£5 10s.			
Wire, barbed, 4-pt. No. 10 B.W.G.	£8 15s.			

Cleveland Ingot Rate Higher Though New Business Declines

**Increase in Production Attributed Mainly to Automobile Orders—
Many Buyers Waiting Until After Election**

CLEVELAND, Nov. 1.—Demand for finished steel has declined after a rather steady upward trend lasting for several weeks. However, ingot production in Cleveland is up six points this week to 32 per cent of capacity, or the best since early in June. Two additional open-hearth furnaces were put on by the Otis Steel Co., and this increase appears attributable to tonnage that came recently from the motor car industry.

The setback in new business seems due entirely to the policy of many buyers to place no more orders until after election. October ended with a somewhat better volume of business than in September. The gain in the heavier rolled steel products was in spite of the absence of much bar business from the motor car industry. With the spurt of buying by two or three of the automobile manufacturers, the sheet and strip tonnage increased considerably over that of the previous month. However, this demand has tapered off, although there was some further buying in small lots by automobile manufacturers during the week.

Structural activity was increased by the release of 4300 tons for a Mississippi River bridge for Morgan City, La., which the State of Louisiana placed with an Ohio fabricator in October, 1931, but the construction of which was held up because of complications in connection with a bond issue.

Little rail business is expected this year from railroads with headquarters here. Some of these roads have not yet laid all the rails purchased for this year, and the Erie Railroad does not plan to make any rail purchases before early spring.

Pig Iron

While the recent improvement in shipments is being maintained, there is little new demand and no gain in orders is looked for before election. Sales by Cleveland interests during the week aggregated 2500 tons. One producer shipped twice as much iron in October as in September and shipments by another gained 75 per cent. Sales, however, declined as compared with the previous month. The gain in orders is largely from product manufacturers. Business remains very quiet with jobbing foundries.

Iron Ore

October proved to be the best month of the year in shipments of

Lake Superior ore, the amount moved by water during the month being 926,561 tons compared with 641,228 tons in September. The total water movement for the season until Nov. 1 was 3,317,716 tons. As the movement is expected to decline rather sharply this month, total shipments for the year will be well under 4,000,000 tons.

Strip Steel

Some of the automobile accessory plants are getting busier and have placed new orders for immediate shipment. This business supplements purchases made two weeks ago by the same consumers. Demand from other sources is slow. Hot-rolled strip is firm at 1.45c., Pittsburgh. While some consumers were able the past week to order cold-rolled strip against 1.90c. third quarter contracts, the market on this grade is firmer and prices be-

low 2c. seem to have about disappeared.

Bars, Plates and Shapes

New demand for bars is confined to small miscellaneous lots. Little business is coming from the motor car industry. Activity in the construction field is still limited to public work and no new inquiry is reported. Fabricators have bid on 1400 tons for a Mississippi River lock and dam project. The seven Ohio highway bridges for which bids will be taken Nov. 4 will require 1400 tons of structural shapes. Bids will be taken at the same time for 20 concrete bridges requiring 900 tons of reinforcing bars. Bids for barges requiring 425 tons of steel will be taken by the United States Engineers, Washington, Nov. 15.

Scrap

A local mill has arranged with dealers with which it has contracts to take additional tonnages of heavy melting steel at \$8 for No. 1 and \$7.50 for No. 2, which will be delivered with scrap due on old contracts purchased at 50c. a ton higher. This has resulted in an advance of 50c. a ton or to the price that prevailed two weeks ago on the No. 1 grade. Local shipments of blast furnace scrap have been held up, causing signs of weakness in these grades.

Reinforcing Steel

Awards 1550 Tons—New Projects 2500 Tons

AWARDS

Oneonta, N. Y., 395 tons, tuberculosis hospital, to Concrete Steel Co.
Birmingham, 250 tons, railroad warehouse, to Truscon Steel Co.
Birmingham, 170 tons, State highway work, to Truscon Steel Co.
State of Florida, 200 tons, highway work, to Truscon Steel Co.
Hamilton, Ohio, 110 tons, school, to Kalman Steel Corp.
Sheboygan, Wis., 250 tons, post office, to Concrete Engineering Co.
Jackson County, Ore., 140 tons, Diamond Lake highway bridges, to Virginia Bridge & Iron Co.

NEW REINFORCING BAR PROJECTS

State of New Jersey, 480 tons, viaduct, route 21, section 1A, over Pennsylvania and Lehigh Valley tracks at Newark; bids to be taken Nov. 14.
State of Ohio, 900 tons, 20 highway bridges; bids close Nov. 4.
Fountain City, Wis., 365 tons, lock No. 5, Mississippi River development; bids soon.
State of Montana, 120 tons, bridge and highway projects; bids close Nov. 4.
State of Wyoming, 125 tons, highway bridges and minor structures; to be taken Nov. 4 and 9.
State of California, 145 tons, highway structures in Kern and San Diego counties; bids close Nov. 16.
Los Angeles County, Cal., 129 tons, Pacoima Wash structures; bids close Nov. 9.
Nyssa, Ore., 182 tons, Owyhee reclamation project, tunnel No. 1.

Cast Iron Pipe

Town Council, Pineville, N. C., Paul R. Ervin, head of committee in charge, is considering installation of 8-in. line from Charlotte,

N. C., to Pineville, for water supply. Line will be about 10 miles long. Cost about \$40,000.

Pleasantville, N. J., plans extensions in water supply system.

Jefferson County, Ala., at Birmingham, has sewer project pending which will require about 3400 tons of 36- and 42-in.

Beaumont, Tex., opened bids on 150 tons of 8- and 12-in.; McWane Cast Iron Pipe Co. was low bidder.

Wilmette, Ill., will take bids Nov. 15 on 800 tons, funds to be furnished by Reconstruction Finance Corporation.

Fond du Lac, Wis., has ordered 1300 ft. of 12-in. pipe from Glamorgan Pipe & Foundry Co.

Campbellsport, Wis., closes bids Nov. 4 on 16,000 lin. ft. of 6- and 8-in.

Hartland, Wis., closes bids Nov. 5 on 4500 lin. ft. of 4-in., 25,800 lin. ft. of 6-in. and 2500 lin. ft. of 8-in. class C for water mains.

St. Louis has awarded 400 tons to American Cast Iron Pipe.

Grand Island, Neb., has awarded 600 tons of 10-, 12- and 20-in. to National Cast Iron Pipe Co.

Los Angeles, has awarded 5000 tons to United States Pipe & Fdy. Co., 700 tons to American Cast Iron Pipe Co., 230 tons to McWane Cast Iron Pipe Co. and 450 tons to National Cast Iron Pipe Co.

Soledad, Cal., has voted bonds for \$37,000 for construction of a municipal water system which will include 276 tons of 4-, 6- and 8-in.

Wanakah Water Co., Hamburg, N. Y., has been awarded R.F.C. loan of \$70,000 for fire protection extension requiring about 800 tons.

Amherst County, Va., has received R.F.C. loan of \$62,500 for constructing water supply system requiring 450 tons.

Bowling Green, Ky., will require 275 tons for city sewer system for which R.F.C. loan of \$630,000 has been made.

Hobart, Okla., has received R.F.C. loan of \$250,000 for water supply system requiring 1800 tons.

Eagle Pass, Tex., has been awarded R.F.C. loan of \$1,476,000 for irrigation and power projects; pipe requirements not stated.

New York Central to Repair 13,000 Freight Cars

Lackawanna Road Orders 4000 Tons of Rails—General Steel
Business Has Tapered Off

NEW YORK, Nov. 1.—Although October as a whole brought an increase over September in steel sales in the New York district, the volume of business in the latter half of the month was not as large as in the first half. Some companies have noticed a decided drop in the past two weeks, while others report only a moderate tapering off. The general belief is that the uncertainty as to the election has held back business. Despite this setback, the outlook appears to be improving slightly, especially with regard to railroad takings of steel.

No large rail inquiries or orders have appeared, but the Delaware, Lackawanna & Western has placed 4000 tons for January rolling with Bethlehem Steel. Rail makers have canvassed all of the railroads only to find that most of them still have stocks of rails on hand.

Steel orders for railroad repair programs are more likely to come in the next several weeks than rail orders. The New York Central, finding its supply of light cars falling short of larger traffic requirements, has asked the Interstate Commerce Commission for permission to borrow \$2,500,000 from the Reconstruction Finance Corporation for the repair of 10,000 steel box cars and 3000 automobile cars.

Opposition of the New York City administration to the proposed construction of the Thirty-eighth Street tunnel by the Port of New York Authority with funds to be furnished by the Reconstruction Finance Corporation probably will result in that project being shelved for some time. The State of New Jersey is taking bids on 3010 tons of structural steel for a viaduct over the tracks of the Pennsylvania and Lehigh Valley Railroads at Newark.

Pig Iron

With business activity virtually eclipsed by interest in politics, trading in this market at the close of October was extremely quiet. Although some buying, which has been deferred pending election results, will undoubtedly be imperative next month to replenish meager stocks, there is some doubt that such buying will reach important volume unless more tangible prospects appear that can be translated soon into heavier cupola charges. Total sales in the past week tapered off to only 1500 tons from 2000 tons in the preceding week and 2500 tons two weeks ago. Foreign competition

continues to retard efforts of domestic sellers to maintain furnace base prices. Evidence of open breaks in prevailing schedules is lacking, however, and prices are nominally unchanged.

Reinforcing Bars

Fresh specifications are virtually restricted to State projects. Bids are

Golden Gate Bridge Cable Award Raisers San Francisco Controversy

SAN FRANCISCO, Oct. 31.—The contract for the steel cable, suspenders and accessories for the Golden Gate bridge, which was to have been awarded last week, has stirred up a sharp controversy that is delaying the work of getting the project under way. The cables total about 22,000 tons, and there is 6000 tons of additional steel in the suspenders and accessories.

The John A. Roebling's Sons Co. of California, a subsidiary of the Roebling company of Trenton, N. J., was low bidder at \$5,855,000, while the Columbia department of the United States Steel Products Co. was the only other bidder, with a bid of \$5,886,000. Since there is only \$31,000 difference between the two bids and since the Columbia company was low on subsidiary items covering additions and deductions, a keen local

being taken on 164 tons of bars for Harlem Valley State Hospital water supply system at Wingdale, N. Y., and on 480 tons for a viaduct over the Pennsylvania and Lehigh Valley tracks at Newark, N. J. Though mills are endeavoring to maintain a base of 1.75c. a lb., Pittsburgh, or 2.10c., New York, pressure of competition continues to force frequent concessions.

Scrap

Consumptive demand continues to lag. Recent transactions have established slightly higher prices for stove plate for delivery to steel works and for specification pipe. Several other grades are weak and nominally lower. A minor tonnage of stove plate is being loaded on barge for delivery in the district.

competitive situation has developed. Questions of local investment and expenditure of the two bidders for labor have been raised, and the San Francisco Chamber of Commerce has been involved, until it appears certain that litigation and a difficult situation will arise whichever way the contract is placed.

This market has been eagerly awaiting the placing of the final contracts for the Golden Gate project and the calling of bids on the Yerbe Buena transbay bridge, both of which are to be built over San Francisco Bay. Financing arrangements have been completed for both jobs.

The current run of business consists mostly of small lots, there having been no important lettings. The reduction in the price of heavy rails has thus far brought out no rail inquiry in this section.

Buffalo Pig Iron Shipments Sustained

BUFFALO, Nov. 1.—Pig iron consumers who placed their orders in September and October have been taking tonnage in excess of expectations. There has been a gradual gain in foundry operations in this district, although the melt is still far below normal. Three furnaces continue in blast. Prices are unchanged.

Steel

Six open-hearth furnaces are scheduled to operate in the Buffalo district this week. Although this is a reduction of one unit from last week, it represents a change for the better in

that Republic is now operating continuously instead of every other week, as had been its custom. A hearing is being held today with respect to eliminating grade crossing at Tift Street, Buffalo. If this project is approved, several thousand tons of steel will be required for the work.

Scrap

Weakness of scrap in some other consuming centers, notably Youngstown, has had a corresponding effect on list quoted here, but there have been no sales to establish actual prices. Small shipments of short steel rails and various grades of cast and stove plate continue to go to consumers in this district. Very little open-hearth or blast furnace scrap is moving.

Fabricated Structural Steel

Bookings Light—New Projects Higher

INCLUDING 3450 tons for bridge work, lettings called for only 4500 tons, making one of the smallest totals for any week this year. New projects of 9400 tons compare with 5100 tons a week ago. More than 3000 tons will be required for a viaduct in northern New Jersey over the Pennsylvania and Lehigh Valley tracks. Contracts in October, at 39,900 tons, were the smallest for any month this year. They compare with 67,615 tons in September, 68,300 tons in August and 44,200 tons in July. Awards follow:

NORTH ATLANTIC STATES

Springfield, Mass., 235 tons, bridge for Boston & Albany Railroad, to Phoenix Bridge Co., previously reported to an unnamed fabricator.

Dannemora, N. Y., 150 tons, State hospital, to Kellogg Structural Steel Co.

Baltimore, 650 tons, Paterson Park school, to Armstrong Parker Co.

Tioga County, Pa., 175 tons, truss bridge for State highway, to Bauman Iron Works, Reading.

Rochelle Park, N. J., 255 tons, highway bridge, to Harris Structural Steel Co.

Burlington County, N. J., 200 tons, highway bridge, to McClintic-Marshall Corp.

Pittsburgh, 3000 tons, lock and dam on Allegheny River from Vang Construction Co., general contractor, to Jones & Laughlin Steel Corp.

SOUTH AND SOUTHWEST

Harrell, Ala., 150 tons, highway bridge, to Wheeling Structural Steel Co.

Ravia, Okla., 375 tons, bridge, to an unnamed bidder.

Jefferson County, Okla., 450 tons, bridge, to Pittsburgh-Des Moines Structural Steel Co.

Southern Pacific Railroad, 190 tons, bridge, to Virginia Bridge & Iron Co.

CENTRAL STATES

St. Clair County, Ill., 100 tons, bridge, to McClintic-Marshall Corp.

Logan County, Ill., 280 tons, bridges; 180 tons to Clinton Engineering Co. and 100 tons to Midland Structural Steel Co.

State of Missouri, 450 tons, bridges, to Stupp Brothers Bridge & Iron Co.

Henry County, Mo., 175 tons, bridge work, to St. Joseph Structural Steel Co.

Jackson County, Mo., 325 tons, bridge, to Kansas City Structural Steel Co.

States of New Mexico and Wyoming, 325 tons, bridges, to American Bridge Co.

WESTERN STATES

San Rafael and Sunnyvale, Cal., 180 tons, towers for line changes to Army and Navy air bases, to Pacific Coast Steel Co.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Revere, Mass., 120 tons, Beach Street bridge.

St. George, Staten Island, N. Y., 800 tons, viaduct over Baltimore & Ohio tracks; bids to be taken Nov. 7.

Binghamton, N. Y., 600 tons, State armory.

State of New Jersey, 3010 tons, viaduct, route 21, section 1A, over Pennsylvania and Lehigh Valley tracks; bids Nov. 14.

Metuchen, N. J., 120 tons, highway bridge over Pennsylvania Railroad; bids Nov. 8.

Delaware County, Del., unstated tonnage, moveable bridge over Chesapeake and Delaware Canal for Federal Government; bids Dec. 15.

Baltimore, 1400 tons, United States appraisers' stores.

Washington, 7700 tons, Archives building; opening of bids postponed to Nov. 10.

THE SOUTH

Fredericksburg, Va., 250 tons, plant building for Sylvania Industrial Corp.

CENTRAL STATES

Oak Park, Ill., 400 tons, post office.

Justice Park, Ill., 1500 tons, highway bridge; American Bridge Co., low bidder.

State of Illinois, 500 tons, bridges; Vincennes Bridge Co., low bidder.

Fountain City, Wis., 685 tons, Lock No. 5, Mississippi River development; bids soon.

WESTERN STATES

State of Utah, 450 tons, highway bridges at Tooele and Colton.

State of Montana, 300 tons, highway bridge over Missouri River at Wolf Creek.

State of Montana, 152 tons, highway bridges in Teton, Fondera and Daniels counties; bids close Nov. 4.

Cascade County, Mont., 146 tons, Sun River bridge; bids close Nov. 4.

Harpster, Idaho, 130 tons, Clearwater River State highway bridge.

Nyssa, Ore., 395 tons, Owyhee reclamation project, tunnel No. 1.

FABRICATED PLATE

AWARDS

Cincinnati, 235 tons, 48-in. welded pipe, to Alco Products Co.

Fabricated Plate Orders Off in September

WASHINGTON, Nov. 1.—Orders in September for fabricated steel plate totalled 11,013 tons against 11,916 tons in August, according to reports received by the Bureau of the Census from 51 identical manufacturers. The principal consuming sources in September were oil storage tanks, 3753 tons, and miscellaneous, 6801 tons.

Orders reported for nine months of the current year totaled 127,591 tons compared with 246,960 tons in the corresponding period of last year.

Gray Iron Castings Gained in September

Sales of gray iron castings increased more than 11 per cent in September as compared with August, according to the monthly report of the Gray Iron Institute. Production, which started upward in August, showed a further slight gain and there was also an increase in unfilled orders. Every district and all types of foundries showed an increase in production.

Production of members reporting in September was 39.2 per cent of nor-

mal capacity, compared with 38.6 per cent in August. New business was 35.8 per cent, against 32.2 per cent during the previous month and unfilled orders were 30.1 per cent, against 27.2 per cent the previous month.

Production in the Eastern district including New England, New York and New Jersey increased to 35.3 per cent of normal last month, compared with 26.2 per cent in August. Production in the district including Pennsylvania, Michigan, Ohio and Indiana increased last month from 33.4 per cent to 37.9 per cent. In the territory including Wisconsin, Illinois and the West the September production was 74.4 per cent, against 39 per cent in August. The Chicago district increased to 43.8 per cent in September from 42 per cent in August. Some improvement in the business outlook was indicated by reports of members.

Steel Castings Orders Gained in September

WASHINGTON, Nov. 1.—Making a gain of 1736 tons, orders for commercial steel castings in September were 11,883 tons, or 8.1 per cent of the capacity of the 130 establishments reporting to the Bureau of the Census, comparing with 10,147 tons or 6.9 per cent of capacity in August.

The September bookings consisted of 3337 tons of railroad specialties and 8546 tons of miscellaneous castings.

Orders in the first nine months of the current year were 119,186 tons, or 9 per cent of capacity, against 329,941 tons, or 25.2 per cent of capacity, in the corresponding period of last year.

The September production declined to 11,337 tons from 12,331 tons in August. In the first nine months of 1932 the output was 137,583 tons against 367,936 tons in the corresponding period of 1931.

Railroad Equipment

New York Central has filed application with Reconstruction Finance Corporation for a "work" loan of \$2,500,000, which it proposes to use for repairs to 10,000 steel box cars and 3000 automobile cars. It is estimated that the work would provide seven to eight months' employment to 1500 men at the New York Central's East Buffalo, N. Y., and Indianapolis shops.

Class I railroads on Oct. 1 had 262,153 freight cars in need of repair, or 12.4 per cent of the number on line, according to Car Service Division of the American Railway Association. This was an increase of 8545 cars over the number in need of repair on Sept. 1. These roads also had 8875 locomotives in need of classified repairs, or 17.1 per cent of the number on line, on Oct. 1. This was an increase of 479 compared with the number in need of such repairs on Sept. 1.

Norfolk & Western has scheduled repairs to 500 hopper coal cars at its Roanoke, Va., shops.

Chicago & Great Western is taking alternate bids on 200 70-ton steel hopper cars and 200 70-ton steel dump cars.

Non-Ferrous Markets Sluggish; Copper Price Recedes to 5.25c.

NEW YORK, Nov. 1.—Continued pressure from custom smelters to draw out consumer requirements forced down the price of electrolytic copper early last week to 5.25c. a lb., Connecticut, for prompt delivery. While some metal is still available at that price, a slight pick-up in inquiry and small-lot orders this week has tended to lessen selling pressure, with the result that offerings at 5.37½c. are more in evidence than the lower quotation. The 5.37½c. price, however, is applicable through first quarter. Counteracting the weakness in the smelters' price is the adamant position maintained by large mine producers, who thus far have refused to budge from their posting of 6.25c., delivered, though at that price they are out of the current market. Foreign copper prices slid off further during the week, with minor sales having been made at from 5.20c. to 5.25c., c.i.f., usual foreign ports. Recent conferences in London between British and European producers, including the Katanga interests, disclosed several difficulties that beset the industry in respect to a realignment of marketing and production of

world copper output following expiration on Dec. 31 of the existing agreement restricting output. One of the major difficulties is understood to be the claim of the Union Minière du Haut Katanga for an increase in its quota from 60,000 to 100,000 tons annually. Other obstacles that will be considered at a forthcoming meeting of world producers in New York in November include exchange depreciation and tariffs.

Copper Averages

The average price of Lake copper for October, based on daily quotations in THE IRON AGE, was 5.99½c. The average price of electrolytic copper in that month was 5.72½c., refinery, or 5.97½c., delivered Connecticut.

Tin

Occasional spurts of consumer buying toward the close of the past week offered the only indication of activity in an otherwise lifeless market. The New York price of tin, though slightly lower than a week ago, was fairly steady throughout the week and proved largely resistant to sterling exchange fluctuations. Steadiness pre-

vailed also in the London market, with today's postings £152 5s. a ton for spot standard, £152 17s. 6d. for future standard and £158 for spot Straits. The Singapore market today, at £157 15s., reflected little change for the week. September statistics revealed a decrease of 801 tons in the world's visible tin supply and an increase of 452 tons in the Eastern carryover. Straits shipments in the past month totaled 3750 tons. A decrease of 116 tons last week in United Kingdom warehouse stocks brought the total down to 31,129 tons.

Lead

Demand continues to be steady. Current buying is practically all for November delivery. With a fair amount of lead still to be purchased for shipment this month, little attention has yet been directed to December requirements. The principal interests are maintaining prices at 3c., New York, and 2.90c., St. Louis, though in the latter district offerings are available at 2.87½c.

Zinc

Consumer interest is still lethargic. The extreme dullness is indicated by total sales of only 700 tons in the past week. In spite of the lagging demand and lower ore prices, however, quotations are well maintained at 3c., East St. Louis, or 3.37c., New York, for delivery through December.

The Week's Prices. Cents Per Pound for Early Delivery

	Oct. 26	Oct. 27	Oct. 28	Oct. 29	Oct. 31	Nov. 1
Lake copper, New York.....	5.37½	5.25	5.25	5.25	5.25	5.25
Electrolytic copper, N. Y.*.....	5.12½	5.00	5.00	5.00	5.00	5.00
Straits tin, spot, N. Y.....	23.20	23.25	23.30	23.30	23.30	23.35
Zinc, East St. Louis.....	3.00	3.00	3.00	3.00	3.00	3.00
Zinc, New York.....	3.37	3.37	3.37	3.37	3.37	3.37
Lead, St. Louis.....	2.90	2.87½	2.87½	2.87½	2.87½	2.87½
Lead, New York.....	3.00	3.00	3.00	3.00	3.00	3.00

*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.
Nickel, electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 5.50c. a lb., New York.
Brass ingots, 85-5-5-5, 5.75c. a lb., New York and Philadelphia.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig.....	25.50c. to 26.50c.
Tin, bar.....	27.50c. to 29.50c.
Copper, Lake.....	7.50c. to 8.50c.
Copper, electrolytic.....	7.25c. to 8.25c.
Copper, casting.....	7.00c. to 8.00c.
*Copper sheets, hot-rolled.....	15.37½c.
*High brass sheets.....	12.50c.
*Seamless brass tubes.....	15.25c.
*Seamless copper tubes.....	14.37½c.
*Brass rods.....	10.25c.
Zinc, slabs.....	4.37½c. to 4.87½c.
Zinc sheets (No. 9), casks.....	9.25c. to 9.50c.
Lead, American pig.....	3.75c. to 4.25c.
Lead, bar.....	5.25c. to 6.25c.
Lead sheets.....	6.75c.
Antimony, Asiatic.....	8.00c. to 9.00c.
Alum., virgin, 99 per cent plus.....	23.30c.
Alum. No. 1 for remelting, 98 to 99 per cent.....	16.00c.
Solder, ½ and ⅓.....	15.50c. to 16.50c.
Babbitt metal, commercial grade.....	21.00c. to 32.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	27.50c.
Tin, bar.....	29.50c.

Copper, Lake.....	7.25c.
Copper, electrolytic.....	7.25c.
Copper, casting.....	6.875c.
Zinc, slab.....	4.25c. to 4.50c.
Lead, American pig.....	3.75c. to 4.00c.
Lead, bar.....	7.25c.
Antimony, Asiatic.....	8.50c.
Babbitt metal, medium grade.....	16.50c.
Babbitt metal, high grade.....	31.25c.
Solder, ½ and ⅓.....	17.25c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	4.00c.	4.75c.
Copper, hvy. and wire	3.75c.	4.50c.
Copper, light and bottoms.....	2.75c.	3.50c.
Brass, heavy.....	1.875c.	2.625c.
Brass, light.....	1.375c.	2.00c.
Hvy. machine composition.....	2.75c.	3.50c.
No. 1 yel. brass turnings.....	2.25c.	2.625c.
No. 1 red brass or compos. turnings..	2.50c.	3.25c.
Lead, heavy.....	2.125c.	2.50c.
Zinc.....	1.25c.	1.625c.
Cast aluminum.....	3.50c.	5.00c.
Sheet aluminum.....	7.50c.	9.25c.

Pipe Lines

Continental Oil Co., 60 East Forty-second Street, New York, operating Eureka-Wyoming Petroleum Co., Boston-Wyoming Oil Co., and other subsidiaries, is planning expansion and development program in Wyoming oil fields, including steel pipe line from Maverick Springs oilfield district to point near Riverton or Shoshone, Wyo.; entire project to cost about \$1,500,000.

General Purchasing Officer, Panama Canal, Washington, asks bids until Nov. 11 for 68,000 ft. of steel or wrought iron pipe (Schedule 2805).

Northern Natural Gas Co., City National Bank Building, Omaha, Neb., is considering extensions in pipe line system from Owatonna to Northfield, Minn., also to Faribault, Minn.

Amere Gas Utilities Co., Beckley, W. Va., John P. Chenoweth, head, plans construction of 6-in. pipe line to Princeton, W. Va., and vicinity, where natural gas franchise has been asked. Line will extend through Plymouth section and Athens, W. Va., about 17 miles. Cost about \$150,000.

Detroit Scrap Dull

DETROIT, Nov. 1.—The scrap market is listless, with prices unchanged but showing a soft tendency. The local pig iron interest is still taking in borings and turnings for shipment to its Buffalo furnaces in its own boats.

Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

BARS, PLATES, SHAPES

Iron and Steel Bars

Base per Lb.
F.o.b. Pittsburgh mill
F.o.b. Chicago
Del'd Philadelphia
Del'd New York
Del'd Detroit
F.o.b. Cleveland
F.o.b. Lackawanna
F.o.b. Birmingham
C.I.F. Pacific ports

Billet Steel Reinforcing

F.o.b. P'gh mills, 40, 50, 60-ft.
F.o.b. Birmingham, mill length
F.o.b. Cleveland

Rail Steel

F.o.b. mills, east of Chicago dist.
F.o.b. Chicago Heights mills

Iron

Common iron, f.o.b. Chicago
Refined iron, f.o.b. P'gh mills
Common iron, del'd Philadelphia
Common iron, del'd New York

Tank Plates

Base per Lb.
F.o.b. Pittsburgh mill
F.o.b. Chicago
F.o.b. Birmingham
Del'd Cleveland
Del'd Philadelphia
F.o.b. Coatesville
F.o.b. Sparrows Point
Del'd New York
C.I.F. Pacific ports
Wrought iron plates, f.o.b. P'gh

Structural Shapes

Base per Lb.
F.o.b. Pittsburgh mill
F.o.b. Chicago
F.o.b. Birmingham
F.o.b. Lackawanna
F.o.b. Bethlehem
Del'd Cleveland
Del'd Philadelphia
Del'd New York
C.I.F. Pacific ports
C.I.F. Pacific ports (wide flange)

Steel Sheet Piling

Base per Lb.
F.o.b. Pittsburgh
F.o.b. Chicago mill
F.o.b. Buffalo

Alloy Steel Bars

Alloy Quantity Bar Base, 2.45c. to 2.65c. per Lb.
S.A.E. Series
2000 (1/4% Nickel)
2100 (1/4% Nickel)
2300 (3/4% Nickel)
2500 (5% Nickel)
3100 Nickel Chromium
3200 Nickel Chromium
3300 Nickel Chromium
3400 Nickel Chromium
4100 Chromium Molybdenum (0.16 to 0.25 Molybdenum)
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)
4600 Nickel Molybdenum (0.30 to 0.50 Molybdenum, 1.50 to 2.00 Nickel)
5100 Chromium Steel (0.60 to 0.90 Chromium)
5100 Chromium Steel (0.80 to 1.10 Chromium)
5100 Chromium Spring Steel
6100 Chromium Vanadium Bar
4100 Chromium Vanadium Spring Steel
9250 Silicon Manganese Spring Steel (flats)
Rounds and Squares
Chromium Nickel Vanadium
Carbon Vanadium

Above prices are for hot-rolled steel bars, forging quality. The differential for cold-drawn bars is 1/4c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a section area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2 1/2 in. thick, regardless of sectional area, take the bar price.

Cold Finished Bars

Base per Lb.
Bars, f.o.b. Pittsburgh mill
Bars, f.o.b. Chicago
Bars, Cleveland
Bars, Buffalo
Bars, Detroit
Bars, eastern Michigan
Shafting, ground, f.o.b. mill
1-3/16 to 1 1/2 in. 3.00c.
1-9/16 to 1 7/8 in. 2.35c.
1-15/16 to 2 in. 2.20c.
2-15/16 to 2 1/2 in. 2.05c.

*In quantities of 10,000 to 19,999 lb.

SHEETS, STRIP, TIN PLATE, TERNE PLATE

Sheets

Base per Lb.
No. 10 f.o.b. Pittsburgh
No. 10 f.o.b. Chicago mill
No. 10 del'd Philadelphia
No. 10 f.o.b. Birmingham
No. 10, c.i.f. Pacific Coast ports

Hot-rolled and Annealed

No. 10, Pittsburgh
No. 10, Chicago mills
No. 10, Birmingham
No. 10, Pacific Coast ports
No. 10, wrought iron, Pittsburgh

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh
No. 24, f.o.b. Chicago mills
No. 24, del'd Philadelphia
No. 24, f.o.b. Birmingham
No. 24, c.i.f. Pacific Coast ports
No. 24 wrought iron, Pittsburgh

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh
No. 10 gage, f.o.b. Chicago mills
No. 10, gage, del'd Philadelphia

Light Cold-Rolled

Pittsburgh
No. 20 gage, f.o.b. Chicago
Mills
No. 20 gage, del'd Philadelphia

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh

Steel Furniture Sheets

No. 10, f.o.b. Pittsburgh
No. 20, f.o.b. Pittsburgh

(Prices on furniture stock include stretcher leveling but not resquaring.)

Galvanized Sheets

No. 24, f.o.b. Pittsburgh
No. 24, f.o.b. Chicago mills
No. 24, del'd Philadelphia
No. 24, f.o.b. Birmingham
No. 24, c.i.f. Pacific Coast ports
No. 24, wrought iron, Pittsburgh

Long Ternes

No. 24, unassorted, 8-lb. coating, f.o.b. P'gh
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Vitreous Enameling Stock

No. 10, f.o.b. Pittsburgh
No. 20, f.o.b. Pittsburgh

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh
No. 28, Chicago mill

Tin Plate

Base per Box
Standard cokes, f.o.b. P'gh district mill
Standard cokes, f.o.b. Gary

Terne Plate

(F.o.b. Morgantown or Pittsburgh) (Per Package, 20 x 28 in.)
8-lb. coating I.C.
15-lb. coating I.C.
20-lb. coating I.C.
25-lb. coating I.C.
30-lb. coating I.C.
40-lb. coating I.C.

Hot-Rolled Hoops, Bands, Strips and Flats under 1/4 in.

Base per Lb.
All widths up to 24 in., Pittsburgh
All widths up to 24 in., Chicago

Cooperage stock, P'gh...1.55c. to 1.60c.
Cooperage stock, Chicago...1.65c. to 1.70c.

Cold-Rolled Strips

F.o.b. Pittsburgh
F.o.b. Cleveland
Del'd Chicago
F.o.b. Worcester
Fender stock, No. 20 gage, Pittsburgh or Cleveland

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland) (After Dec. 31, extras of 10c. a 100 lb. on mixed and joint carloads, 25c. on pool carloads and 40c. on less than carloads will be applied on all merchant wire products.)
To Manufacturing Trade
Bright wire
Spring wire
To Jobbing Trade
Standard wire nails
Smooth coated nails
Galvanized nails

Base per Lb.
Smooth annealed wire
Smooth galvanized wire
Polished staples
Galvanized staples
Barbed wire, galvanized

Woven wire fence No. 9 gage, per net ton...\$55.00
Woven wire fence, No. 12 1/2 gage and lighter, per net ton...60.00

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill \$2 a ton over Pittsburgh, and Birmingham mill \$3 a ton over Pittsburgh.

STEEL PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Inches	Steel	Black Galv.	Inches	Iron	Black Galv.
1/4	51 1/2	28 1/2	1 1/2	+95	+142 1/2
3/4	57	34	1 3/4	+5	+28 1/2
1	62	49 1/2	2	28	10 1/2
1 1/4	65 1/2	55	2 1/2	33	16 1/2
1 3/4	67 1/2	57	3	36	20 1/2
			3 1/2	40	23
			4	38	21

Lap Weld

2	61	50 1/2	2 1/2	26	12 1/2
2 1/2	64 1/2	54	2 3/4	33	18 1/2
3	69	59	3	35	22
3 1/2	70	60	3 1/2	34	21 1/2
4	72	62	4	31	16 1/2

Butt Weld, extra strong, plain ends					
1/4	.....	48	33	1/4	... +17 + 49 1/2
3/4	to 1/2	53 1/2	38 1/2	1/2	& 3/4 + 7 + 41
1 1/4	.....	59	49 1/2	3/4	..... 28 12 1/2
1 3/4	.....	63 1/2	54	1	..... 33 17 1/2
2	to 1 1/4	65 1/2	56	1 to 2	..... 39 23
2	to 3	66 1/2	57		

Lap Weld, extra strong, plain ends							
2	.....	59	49½	2	.....	34	18½
2½	to 4..	62½	53	2½	to 4..	39	25
4½	to 6..	62	52½	4½	to 6..	38	24
7	to 8..	58	47	7 & 8..	36	22	
9	and 10.	51½	40½	9 to 12..	26	13½	
11	and 12	50½	39½				

Discounts on steel and wrought iron pipe are net and not subject to any points or preferentials.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel	Charcoal Iron
2 in. and 2 1/4	1 1/4 in. 1
2 1/2 in. 38	1 1/2 in. 8
2 3/4 in. 46	2 in. 13
3 in. 52	2 1/4 in. 16
3 1/2 in. 54	3 in. 17
4 in. 57	3 1/2 in. 18
4 1/2 in. to 6 in. 46	4 in. 20
	4 1/2 in. 21

On lots of a carload or more, the above base discounts are subject to a preferential of two five on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two five. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

Cold-Drawn
1 in. 61
1 1/4 to 1 1/2 in. 53
1 3/4 in. 37
2 to 2 1/4 in. 32
2 1/2 to 2 3/4 in. 40

Hot Rolled
2 and 2 1/4 in. 38
2 1/2 and 2 3/4 in. 46
3 in. 52

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb. base discounts are reduced 6 points with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. lighter than standard gages takes the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List
Carbon, 0.10% to 0.30% base (carloads) 55
Carbon, 0.30% to 0.40% base 50
Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

RAILS AND TRACK SUPPLIES

Rails

Per Gross Ton
Standard, f.o.b. mill
Light (from billets), f.o.b. mill
Light (from rail steel, f.o.b. mill)

Track Equipment

Base per 100 Lb.
Spikes, 9/16-in. and larger
Spikes, 1/2-in. and large
Spikes, boat and barge
Tie plates, steel
Angle bars
Track bolts, to steam railroads
Track bolts, to jobbers, all sizes, per 100 count

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List
Machine bolts
Carriage bolts
Lag bolts
Flange bolts, Nos. 1, 2, 3 and 7 heads
Hot-pressed nuts, blank or tapped, square
Hot-pressed nuts, blank or tapped, hexagons
C.p.c. and t. square or hex nuts, blank or tapped
Washers

*F.o.b. Chicago, New York and Pittsburgh.

†Bolts with rolled thread up to and including 1/2 in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

Per Cent Off List
Semi-finished hexagon nuts
Semi-finished hexagon castellated nuts, S.A.E.
Stove bolts in packages, P'gh
Stove bolts in packages, Chicago
Stove bolts in pkgs., Cleveland
Stove bolts in bulk, P'gh
Stove bolts in bulk, Chicago
Stove bolts in bulk, Cleveland
Tire bolts

Discount of 75 per cent off on bolts and nuts applies on carload business with jobbers and large consumers.

Large Rivets

Base per Lb.
F.o.b. Pittsburgh or Cleveland
F.o.b. Chicago

Small Rivets

Per Cent Off List
F.o.b. Pittsburgh
F.o.b. Cleveland
F.o.b. Chicago

Cap and Set Screws

Discounts to Jobbers

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List
Milled cap screws, 1 in. dia. and smaller
Milled standard set screws, case hardened, 1 in. dia. and smaller
Milled headless set screws, cut thread, 1/2 in. and smaller
Upset hex head cap screws, U.S.S.A. or S.A.E. thread, 1 in. dia. and smaller
Upset set screws, sq. head, 1 in. dia. and smaller
Upset set screws, 1 1/4 in. and larger
Milled studs

SEMI-FINISHED STEEL

Billets and Blooms

Per Gross Ton
Revolving, 4-in. and under 10-in., Pittsburgh
Revolving, 4-in. and under 10-in., Youngstown
Revolving, 4-in. and under 10-in., Cleveland
Revolving, 4-in. and under 10-in., Chicago
Forging quality, Pittsburgh
Forging quality, Youngstown

Sheet Bars

(Open-Hearth or Bessemer) Per Gross Ton
Pittsburgh
Youngstown
Cleveland

Slabs

(5 in. x 2 in. and under 10 in. x 10 in.) Per Gross Ton
Pittsburgh
Youngstown
Cleveland

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No. 2 busheling.....	\$2.00 to \$2.50
Locomotive tires, smooth.....	7.50 to 8.50
Pipe and flues.....	1.25 to 1.75
No. 1 machinery cast.....	6.25 to 6.75
Clean automobile cast.....	6.75 to 7.25
No. 1 railroad cast.....	5.50 to 6.00
No. 1 agricultural cast.....	5.75 to 6.25
Stove plate.....	5.50 to 6.00
Grate bars.....	5.25 to 5.75
Brake shoes.....	6.25 to 6.75

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

PHILADELPHIA

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel.....	\$7.00 to \$7.50
No. 2 heavy melting steel.....	5.50 to 6.00
No. 1 railroad wrought.....	7.50 to 8.00
Bundled sheets.....	4.00 to 4.50
Hydraulic compressed, new.....	6.00 to 6.50
Hydraulic compressed, old.....	4.00 to 4.50
Machine shop turnings.....	3.50 to 4.00
Heavy axle turnings.....	5.50 to 6.00
Cast borings.....	3.50 to 3.75
Heavy breakable cast.....	9.00 to 9.50
Stove plate (steel works).....	6.00 to 6.50
No. 1 low boys heavy.....	10.00 to 10.50
Couplers and knuckles.....	9.00 to 9.50
Roller steel wheels.....	9.00 to 9.50
No. 1 blast furnace.....	3.50 to 3.75
Spec. iron and steel pipe.....	6.50 to 7.00
Shafting.....	12.00 to 13.00
Steel axles.....	12.00 to 13.00
No. 1 forge fire.....	5.50 to 6.00
Cast iron car wheels.....	9.50 to 10.00
No. 1 east.....	9.50 to 10.00
Cast borings (chem.).....	8.00 to 10.00
Steel rails for rolling.....	9.00 to 9.50

CLEVELAND

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel.....	\$7.50 to \$8.00
No. 2 heavy melting steel.....	7.00 to 7.50
Compressed sheet steel.....	6.00 to 6.50
Light bundled sheet stampings.....	4.00 to 4.50
Dron forge flashings.....	5.25 to 5.75
Machine shop turnings.....	4.00 to 4.50
Short shoveling turnings.....	4.50 to 5.00
No. 1 busheling.....	5.25 to 5.50
Steel axle turnings.....	5.00 to 5.50
Hot phos., billet crops.....	10.00 to 11.00
Cast iron borings.....	4.75 to 5.25
Mixed borings and short turnings.....	4.75 to 5.25
No. 2 busheling.....	4.75 to 5.25
No. 1 cast.....	7.50 to 8.00
Railroad grate bars.....	5.00 to 5.50
Stove plate.....	5.00 to 5.50
Rails under 3 ft.....	8.50 to 9.00
Rails for rolling.....	8.50 to 9.00
Railroad malleable.....	6.75 to 7.00
Cast iron car wheels.....	8.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:	
No. 1 heavy melting steel.....	\$7.00 to \$7.50
No. 2 heavy melting steel.....	6.25 to 6.75
Scrap rails.....	6.75 to 7.25
New hydraulic comp. sheets.....	6.25 to 6.75
Old hydraulic comp. sheets.....	6.00
Dron forge flashings.....	5.75 to 6.25
No. 1 busheling.....	6.25 to 6.75
Hvy. steel axle turnings.....	6.00
Machine shop turnings.....	4.00 to 4.50
Knuckles and couplers.....	10.00
Coil and leaf springs.....	10.00
Roller steel wheels.....	10.00
Low phos., billet crops.....	9.00 to 9.50
Short shov. steel turnings.....	5.50 to 6.00
Short mixed borings and turnings.....	3.75 to 4.25
Cast iron borings.....	3.50 to 4.00
No. 2 busheling.....	3.50 to 4.00
Steel car axles.....	10.00 to 11.00
Iron axles.....	10.00 to 11.00
No. 1 machinery cast.....	9.50 to 10.00
No. 1 cupola cast.....	8.50 to 9.00
Stove plate.....	8.50 to 9.00
Steel rails, 3 ft. and under.....	9.25 to 9.75
Cast iron car wheels.....	8.00 to 9.00
Industrial malleable.....	7.00 to 7.50
Railroad malleable.....	7.00 to 7.50
Chemical borings.....	7.50 to 8.00

BIRMINGHAM

Per gross ton delivered consumers' yards:	
Heavy melting steel.....	\$7.50 to \$8.00
Scrap steel rails.....	8.00 to 8.50
Short shoveling turnings.....	4.00
Stove plate.....	6.00
Steel axles.....	9.00
Iron axles.....	9.00
No. 1 railroad wrought.....	4.50 to 5.00
Rails for rolling.....	8.00 to 8.50
No. 1 cast.....	8.50
Tramcar wheels.....	8.50
Cast iron borings, chem.....	8.50

ST. LOUIS

Per gross ton delivered consumers' yards:	
Selected heavy steel.....	\$6.00 to \$6.50
No. 1 heavy melting.....	5.50 to 6.00
No. 2 heavy melting.....	5.00 to 5.50
No. 1 locomotive tires.....	5.00 to 5.50
Misc. stand-sec. rails.....	6.00 to 6.50
Railroad springs.....	7.25 to 7.75
Bundled sheets.....	2.00 to 2.50
No. 2 railroad wrought.....	5.00 to 5.50
No. 1 busheling.....	3.50 to 4.00
Cast iron borings and shoveling turnings.....	2.75 to 3.25
Iron rails.....	7.00 to 7.50
Rails for rolling.....	7.50 to 8.00
Machine shop turnings.....	2.00 to 2.50
Heavy turnings.....	3.00 to 3.50
Steel car axles.....	8.50 to 9.00
Iron car axles.....	11.00 to 11.50
Wrot. iron bars and trans.....	5.00 to 5.50
No. 1 railroad wrought.....	3.50 to 4.00
Steel rails less than 3 ft.....	7.50 to 8.00
Steel angle bars.....	6.00 to 6.50

Cast iron car wheels.....	5.50 to 6.00
No. 1 machinery cast.....	6.50 to 7.00
Railroad malleable.....	4.00 to 4.50
No. 1 railroad cast.....	6.25 to 6.75
Stove plate.....	6.00 to 6.50
Relay rails, 60 lb. and under.....	16.00 to 16.50
Relay rails, 60 lb. and over.....	20.00 to 21.00
Agricult. malleable.....	4.00 to 4.50

NEW YORK

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel.....	\$4.00 to \$4.50
No. 2 heavy melting steel.....	2.75 to 3.00
Heavy melting steel (yard).....	1.50
No. 1 hvy. breakable cast.....	5.00 to 5.25
Stove plate (steel works).....	2.50 to 2.90
Machine shop turnings.....	0.75 to 1.25
Short shoveling turnings.....	0.75 to 1.25
Cast borings.....	0.50 to 1.00
No. 1 blast furnace.....	0.50 to 1.00
Steel car axles.....	8.00 to 8.50
Spec. iron and steel pipe.....	2.50 to 2.75
Forge fire.....	2.75 to 3.00
No. 1 railroad wrought.....	4.00 to 4.50
No. 1 yard wrought, long.....	3.25 to 3.50
Rails for rolling.....	5.00 to 5.50
No. 1 cast.....	5.00 to 5.50
No. 2 cast.....	4.50 to 5.00
Stove plate (foundry).....	4.50
Malleable cast (railroad).....	4.00 to 4.50
Cast borings (chemical).....	6.00 to 6.50
Per gross ton, delivered local foundries:	
No. 1 machinery cast.....	\$9.00
No. 1 hvy. cast (cupola).....	7.50 to 8.00
No. 2 cast.....	4.00 to 4.50

PITTSBURGH

Base per Lb.	
Plates.....	2.85c
Structural shapes.....	2.85c
Soft steel bars and small shapes.....	2.60c
Reinforcing steel bars.....	2.60c
Cold-finished and screw stock.....	2.95c
Rounds and hexagons.....	2.95c
Squares and flats.....	3.45c
Hoops and bands, under 1/4 in.....	2.95c
Hot-rolled annealed sheets (No. 24).....	3.15c
25 or more bundles.....	3.15c
Galv. sheets (No. 24), 25 or more bundles.....	3.65c
Hot-rolled sheets (No. 10).....	3.10c
Galv. corrug. sheets (No. 28), per square (less than 3750 lb.).....	\$3.74
Spikes, large.....	2.75c
Small.....	2.75c to 2.90c
Boat.....	3.00c
Track bolts, all sizes, per 100 count.....	70 per cent off list
Machine bolts, 100 count.....	70 per cent off list
Carriage bolts, 100 count.....	70 per cent off list
Nuts, all styles, 100 count.....	70 per cent off list
Large rivets, base per 100 lb.....	\$3.00
Wire, black, soft ann'd'd, base per 100 lb.....	2.75
Wire, galv. soft, base per 100 lb.....	3.20
Common wire nails, per keg.....	2.35
Cement coated nails, per keg.....	2.35
On plates, structural bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders 400 to 999 lb.	

CHICAGO

Base per Lb.	
Plates and structural shapes.....	3.00c
Soft steel bars.....	2.75c
Reinforce. bars, billet steel.....	1.35c to 1.50c
Rail steel reinforcement.....	1.15c to 1.25c
Cold-fn. steel bars and shafting.....	3.00c
Rounds and hexagons.....	3.00c
Flats and squares.....	3.50c
Bands, 1/4 in. (in Nos. 10 and 12 gages).....	2.95c
Hoops (No. 14 gage and lighter).....	3.50c
Hot-rolled annealed sheets (No. 22).....	3.55c
Galv. sheets (No. 24).....	4.10c
Hot-rolled sheets (No. 10).....	3.20c
Spikes (1/4 in. and lighter).....	3.45c
Track bolts.....	4.30c
Rivets, structural.....	3.75c
Rivets, boiler.....	3.75c
Per Cent Off List	
Machine bolts.....	70
Carriage bolts.....	70
Coach and lag screws.....	70
Hot-pressed nuts, sq. lap. or blank.....	70
Hex. head cap screws.....	80 and 10
Cup point set screws.....	75 and 10
Flat head bright wood screws.....	52 1/2 and 10
Spring cotters.....	60
Stove bolts.....	80
Rd. hd. tank rivets, 7/16 in. and smaller.....	65
Wrought washers.....	\$4.50 off list
No. 8 black ann'd'd wire, per 100 lb.....	\$3.45
Com. wire nails, base per keg.....	2.30
Cement c'd'd nails, base per keg.....	2.30

NEW YORK

Base per Lb.	
Plates and struc. shapes.....	3.10c
Soft steel bars, small shapes.....	3.10c
Iron bars.....	3.25c
Iron bars, Swed. char. steel.....	6.50c
Cold-fn. shafting and screw stock.....	3.39c
Rounds and hexagons.....	3.39c
Flats and squares.....	3.89c
Cold-roll. strip, soft and quarter hard.....	4.95c
Hoops.....	3.30c
Rends.....	3.30c
Hot-rolled sheets (No. 10).....	3.00c
Hot-rolled ann'd'd sheets (No. 24*).....	3.50c
Galvanized sheets (No. 24*).....	4.00c
Long term sheets (No. 24).....	4.50c
Standard tool steel.....	12.00c
Wire, black annealed (No. 10).....	3.60c
Wire, galv. annealed (No. 10).....	4.05c
Tire steel, 1/4 x 1/4 in. and larger.....	3.40c
Smooth finish, 1 to 2 1/4 x 1/4 in. and larger.....	3.75c

BOSTON

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel.....	\$3.00 to \$3.25
Scrap T rails.....	2.50 to 2.75
Machine shop turnings.....	0.80 to 1.00
Cast iron borings.....	1.05
Bundled skeleton, long.....	2.00 to 2.10
Forge flashings.....	3.00 to 3.50
Blast furnace scrap.....	0.90 to 1.00
Forge scrap.....	3.00 to 3.25
Shafting.....	9.50 to 10.00
Steel car axles.....	9.00 to 9.50
Wrought pipe.....	4.00 to 4.25
Rails for rolling.....	4.50 to 5.00
Cast iron borings, chemical.....	7.00 to 7.25
Per gross ton delivered consumers' yards:	
Textile cast.....	\$7.00 to \$7.50
No. 1 machinery cast.....	7.50 to 8.00
Stove plate.....	5.00 to 5.25
Railroad malleable.....	8.00 to 8.50

CINCINNATI

Dealers' buying prices per gross ton:	
Heavy melting steel.....	\$6.00 to \$6.50
Scrap rails for melting.....	6.00 to 6.50
Loose sheet clippings.....	1.50 to 2.00
Bundled sheets.....	3.75 to 4.25
Cast iron borings.....	3.25 to 3.75
Machine shop turnings.....	3.00 to 3.50
No. 1 busheling.....	4.50 to 5.00
No. 2 busheling.....	2.75 to 3.25
Rails for rolling.....	6.50 to 7.00
No. 1 locomotive tires.....	7.50 to 8.00
Short rails.....	9.00 to 9.50
Cast iron car wheels.....	6.50 to 7.00
No. 1 machinery cast.....	8.25 to 8.75
No. 1 railroad cast.....	7.75 to 8.25

Warehouse Prices for Steel Products

Open-hearth spring steel, bases.....	4.50c to 7.00c
Common wire nails, base, per keg.....	\$2.69
Per Cent	
Machine bolts, cut thread.....	Off List
1 x 3/8 in. and smaller, .65 to .65 and 10	
Carriage bolts, cut thread.....	4.40c
1/2 x 6 in. and smaller, .65 to .65 and 10	
1/2 x 20 in. and smaller, .65 to .65 and 10	
Boiler Tubes.....	Per 100 Ft.
Lap welded, 2-in.....	\$18.05
Seamless welded, 2-in.....	19.24
Charcoal iron, 2-in.....	24.91
Charcoal iron, 4-in.....	63.65
*No. 28 and lighter, 38 in. wide, 20c. higher per 100 lb.	

ST. LOUIS

Base per Lb.	
Plates and struc. shapes.....	3.25c
Bars, soft steel or iron.....	3.00c
Cold-fn. rounds, shafting, screw stock.....	3.36c
Hot-rolled annealed sheets (No. 24).....	3.80c
Galv. sheets (No. 24).....	4.35c
Hot-rolled sheets (No. 10).....	3.45c
Black corrug. sheets (No. 24).....	3.85c
Hot-rolled annealed sheets (No. 24).....	4.00c
Structural rivets.....	4.00c
Boiler rivets.....	4.00c
Per Cent Off List	
Tank rivets, 1/2 in. and smaller, 100 lb. or more.....	65
Less than 100 lb.....	60
Machine bolts.....	70
Carriage bolts.....	70
Lag screws.....	70
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more.....	70
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more.....	70
Less than 200 lb.....	60

PHILADELPHIA

Base per Lb.	
*Plates, 1/4-in. and heavier.....	2.10c
*Structural shapes.....	2.10c
*Soft steel bars, hex. shapes, iron bars (except bands).....	2.10c
Reinforce. steel bars, sq., twisted and deform.....	2.30c
Cold-fn. steel, rounds and hex.....	3.35c
Cold-fn. steel, sq. and flats.....	3.85c
*Steel hoops.....	2.65c
*Steel bands, No. 12 to 3/16 in. incl.....	2.40c
Spring steel.....	5.00c
Hot-rolled annealed sheets (No. 24).....	3.55c
Galvanized sheets (No. 24).....	3.75c
*Hot-rolled and annealed sheets (No. 10).....	2.55c
Diam. pat. floor plates, 1/4 in.....	5.00c
Swedish iron bars.....	5.60c

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.
*Base prices for 15,000-lb. orders; extra apply for smaller quantities.

CLEVELAND

Base per Lb.	
Plates and struc. shapes.....	2.95c
Soft steel bars.....	2.75c
Reinforce. steel bars.....	2.95c
Cold-fn. rounds and hex.....	3.35c
Cold-fn. flats and sq.....	3.45c
Flat rolled steel under 1/4 in.....	3.00c
Cold-finished strip.....	5.55c
Hot-rolled annealed sheets (No. 24).....	3.25c
Galvanized sheets (No. 24).....	3.75c
Hot-rolled sheets (No. 10).....	3.00c
Black ann'd'd wire, per 100 lb.....	\$2.75
No. 9 galv. wire, per 100 lb.....	3.20
Com. wire nails, base per keg.....	2.35
*Net base, including boxing and cutting to length.	
CINCINNATI	
Base per Lb.	
Plates and struc. shapes.....	3.25c
Bars, soft steel or iron.....	3.00c
New billet reinforce. bars.....	3.00c
Rails steel reinforce. bars.....	3.00c

Burnt cast.....	4.25 to 4.75
Stove plate.....	4.25 to 4.75
Agricultural malleable.....	7.75 to 8.25
Railroad malleable.....	8.25 to 8.75

DETROIT

Dealers' buying prices per gross ton:	
Hvy. melting steel.....	\$5.50 to \$6.00
Borings and short turnings.....	3.50 to 4.00
Long turnings.....	2.75 to 3.25
No. 1 machinery cast.....	7.75 to 8.25
Automotive cast.....	8.00 to 8.50
Hydraul. comp. sheets.....	5.25 to 5.75
Stove plate.....	3.75 to 4.25
New No. 1 busheling.....	4.75 to 5.25
Old No. 2 busheling.....	2.50 to 3.00
Sheet clippings.....	2.00 to 2.50
Flashings.....	4.00 to 4.50

CANADA

Dealers' buying prices per gross ton:		
	Toronto	Montreal
Heavy melting steel.....	\$7.00	\$6.00
Rails, scrap.....	7.00	6.00
No. 1 wrought.....	6.00	8.00
Machine shop turnings.....	2.00	2.00
Boiler plate.....	5.00	4.50
Heavy axle turnings.....	2.50	2.50
Cast borings.....	2.00	2.00
Steel borings.....	2.00	2.00
Wrought pipe.....	7.00	8.00
Steel axles.....	7.00	9.00
Axles, wrought iron.....	7.00	11.00
No. 1 machinery cast.....	12.50	10.00
Stove plate.....	10.00	8.00
Wrought carwheels.....	10.00	8.50
Malleable.....	10.00	8.00

4.75
4.75
8.35
8.75

(F.o.b. Pittsburgh or Youngstown)

	Per Lb.
Prooted	1.60c.
Universal	1.60c.
Sheared	1.60c.

Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	\$37.00
Cleveland	37.00
Chicago	38.00

COKE, COAL AND FUEL OIL

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville	\$1.75 to \$2.00
Prompt, f.o.b. Connellsville	2.75 to 4.25
Foundry, by-product, Chicago	7.00
Ovens, for delivery outside switching districts	7.75
Foundry, by-product, delivered in Chicago switching district	10.00
Foundry, by-product, New England, delivered	8.20 to 8.81
Foundry, by-product, Newark or Jersey City, del'd	9.00
Foundry, by-product, Phila.	7.82
Foundry, by-product, Cleveland, delivered	8.00
Foundry, Birmingham	8.00
Foundry, by-products, St. Louis, f.o.b. ovens	8.00
Foundry, by-products, del'd St. Louis	9.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.20 to \$1.30
Mine run coking, coal, f.o.b. W. Pa.	1.30 to 1.40
Gas coal, 8-in., f.o.b. Pa. mines	1.30 to 1.40
Mine run gas coal, f.o.b. Pa. mines	1.30 to 1.40
Steam slack, f.o.b. W. Pa. mines	0.50 to 0.65
Gas slack, f.o.b. W. Pa. mines	0.50 to 0.65

Fuel Oil

	Per Gal. f.o.b. Bayonne, N. J.
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
	Per Gal. f.o.b. Baltimore
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
	Per Gal. del'd Chicago
No. 3 industrial fuel oil	2.80c. to 2.90c.
No. 5 industrial fuel oil	2.45c. to 2.50c.
	Per Gal. f.o.b. Cleveland
No. 3 distillate	5.00c.
No. 4 industrial	4.50c.

REFRACTORIES

Fire Clay Brick

	Per 1000 f.o.b. Works
High-best Intermediate Duty Brick	\$35.00 to \$30.00
Penn.	35.00 25.00 to 30.00
Maryland ..	35.00 25.00 to 30.00
New Jer.	35.00 25.00 to 30.00
Ohio	35.00 25.00 to 30.00
Kentucky ..	35.00 25.00 to 30.00
Missouri ..	35.00 25.00 to 30.00
Illinois	35.00 25.00 to 30.00
Ground fire clay, per ton	6.50

Chrome Brick

	Per Net Ton
Standard size	\$42.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	\$38.00
Chicago	47.00
Birmingham	50.00
Silica clay, per ton	8.00

Magnesite Brick

	Per Net Ton
Standard sizes, burned, f.o.b. Baltimore and Chester, Pa.	\$61.50
Unburned, f.o.b. Baltimore and Chester, Pa.	52.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	38.50
Domestic, f.o.b. Chewelah, Wash.	20.90

CAST IRON PIPE

	Per Net Ton
4-in. and larger, del'd Chicago	\$38.40 to \$41.40
4-in., del'd Chicago	41.40 to 44.40
4-in. and larger, del'd New York	33.30
4-in., del'd New York	36.30
4-in. and larger, Birm'ham	\$32.00 to \$33.00
4-in., Birmingham	35.00 to 36.00
Class "A" and gas pipe, \$3 extra.	

Pig Iron, Ores, Ferroalloys

VALLEY

Per gross ton, f.o.b. Valley furnace:

Basic	\$13.50
Bessemer	15.00
Gray forge	14.50
No. 2 foundry	14.50
No. 3 foundry	14.00
Malleable	\$14.50 to 15.00
Low phos., copper free	23.00 to 25.00

Freight rate to Pittsburgh or Cleveland district, \$1.89.

PITTSBURGH

Per gross ton, f.o.b. Pittsburgh district furnace:

Basic	\$14.00
No. 2 foundry	15.00
No. 3 foundry	14.50
Malleable	15.00
Bessemer	15.00

Freight rates to points in Pittsburgh district range from 69c. to \$1.28.

CHICAGO

Per gross ton at Chicago furnace:

N'th'n No. 2 fdy.	\$15.50
N'th'n No. 1 fdy.	16.00
Malleable, not over 2.25 sil.	15.50
High phosphorus	15.50
Lake Super. charcoal, sil. 1.50, by rail	23.17
Southern No. 2 fdy.	16.14
Low phos., sil. 1 to 2, Copper free	25.00
Silvery, sil. 8 per cent.	23.67
Bess. ferroal'n, 15 per cent.	28.92

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnaces, not including a switching charge.

ST. LOUIS

Per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	\$17.50
Malleable, f.o.b. Granite City	17.50
Northern No. 2 fdy., del'd St. Louis	\$18.30 to 18.80
Southern No. 2 fdy., del'd	14.56
Northern malleable, del'd	18.30 to 18.80
Northern basic, del'd	18.30 to 18.80

Freight rates 83c. (average) Granite City to St. Louis; \$2.30 from Chicago; \$4.56 from Birmingham.

NEW YORK

Per gross ton, delivered New York district:

* Buffalo, No. 2, del'd east	
N. J.	\$17.41 to \$17.66
East Pa. No. 2 fdy.	15.02 to 15.52
East Pa. No. 2X fdy.	15.52 to 16.02

Freight rates: \$1.52 to \$2.63 from eastern Pennsylvania.

* Prices delivered to New Jersey cities having rate of \$3.41 a ton from Buffalo.

BUFFALO

Per gross ton, f.o.b. furnace:

No. 2 fdy.	\$16.00
No. 2X fdy.	16.50
No. 1 fdy.	17.50
Malleable, sil. up to 2.25	16.50
Basic	15.50
Lake Superior charcoal, del'd	23.41

Per gross ton delivered to most New England points:

* Buffalo, sil. 1.75 to 2.25	\$19.05
* Buffalo, sil. 2.25 to 2.75	19.05
* Buffalo, sil. 1.75 to 2.25	17.41
* Buffalo, sil. 2.25 to 2.75	17.41
* Ala., sil. 1.75 to 2.25	15.64
* Ala., sil. 2.25 to 2.75	16.14

Freight rates: \$5.05 all rail from Buffalo, and \$3.41 to \$3.91 rail and water from Buffalo when \$1 barge and \$2 to \$2.50 New England freight rate are obtainable; \$5.64 rail and water from Alabama to New England seaboard.

* All-rail rate.

* Rail-and-water rate.

CINCINNATI

Per gross ton, delivered Cincinnati:

Ala. fdy., sil. 1.75 to 2.25	\$13.82
Ala. fdy., sil. 2.25 to 2.75	14.32
Tenn. fdy., sil. 1.75 to 2.25	13.52
N'th'n No. 2 foundry	\$17.01 to 17.59
S'th'n Ohio silvery, 8%	21.02

Freight rates, \$2.02 from Ironton and Jackson, Ohio; \$3.82 from Birmingham.

PHILADELPHIA

Per gross ton at Philadelphia:

East. Pa. No. 2	\$15.59 to \$14.09
East. Pa. No. 2X	14.09 to 14.59
East. Pa. No. 1X	14.59 to 15.09
Basic (del'd east. Pa.)	13.50 to 14.00
Malleable	16.50 to 18.00
Stand. low phos. (f.o.b. east. Pa. furnace)	20.50 to 21.50
Cop. fdy. low phos.	
(f.o.b. furnace)	20.50 to 21.50
Va. No. 2	21.79
Va. No. 2X	22.29

Va. No. 2 plain..... 21.54 to 22.04
Va. No. 2X..... 22.04 to 22.54

Prices, except as specified otherwise, are del'd Philadelphia. Freight rates: 84c. to \$1.79 from eastern Pennsylvania furnaces; \$4.67 from Virginia furnaces.

CLEVELAND

Per gross ton at Cleveland furnace:

N'th'n No. 2 fdy. (local delivery)	\$15.00
S'th'n fdy. sil. 1.75 to 2.25	16.14
Malleable (local delivery)	15.00
Ohio silvery, 3 per cent.	21.87
Stand. low. phos., Valley	23.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 63c. average local switching charge; \$3.12 from Jackson, Ohio; \$6.14 from Birmingham.

BIRMINGHAM

Per gross ton, f.o.b. Birmingham dist. furnace:

No. 2 fdy., sil. 1.75 to 2.25 sil.	\$11.00
No. 2 soft, 2.25 to 2.75 sil.	11.50
Basic	11.00

CANADA

Per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$22.60
No. 2 fdy., sil. 1.75 to 2.25	22.10
Malleable	22.60

Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$24.00
No. 2 fdy., sil. 1.75 to 2.25	23.50
Malleable	24.00
Basic	\$23.00 to 23.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard	\$68.00
Foreign, 80%, Atlantic or Gulf port, duty paid	68.00

Prices for lots of one carload or more; extras applied on less than carload lots.

Spiegeleisen

Domestic, 19 to 21%..... \$25.00

Electric Ferroalloy

	Per Gross Ton Delivered
50% (carloads)	\$77.50
50% (less carloads)	85.00
75% (carloads)	126.00
75% (less carloads)	136.00
14% to 16% (f.o.b.) Welland, Ont., in carloads	31.00
14% to 16% (less carloads)	36.00

Bessemer Ferroalloy

F.O.B. Jackson County, Ohio, Furnace			
Per Gross Ton		Per Gross Ton	
10%	.....\$20.50	14%	.....\$23.50
11%	..... 21.00	15%	..... 24.00
12%	..... 21.50	16%	..... 25.00
13%	..... 22.50	17%	..... 26.50

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace			
Per Gross Ton		Per Gross Ton	
6%	.....\$18.00	12%	.....\$20.50
7%	.....18.50	13%	.....21.50
8%	.....18.75	14%	.....22.50
9%	.....19.00	15%	.....23.00
10%	.....19.50	16%	.....24.00
11%	.....20.00	17%	.....25.50

Other Ferroalloys

Ferrotungsten, per lb. wo. del., carloads 91c.

Ferrotungsten, less carloads..... \$1.00

Ferrosilicon, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads 10.00c.

Ferrosilicon, 2% carbon 17.00c. to 17.50c.

Ferrosilicon, 1% carbon 19.00c. to 20.00c.

Ferrosilicon, 0.10% carbon 23.50c.

Ferrosilicon, 0.05% carbon 25.00c. to 27.00c.

Ferrosilicon, del. per lb. contained Va. \$3.05 to \$3.30

Ferrosilicon, 15 to 18%, per net ton, f.o.b. furnace in carloads 160.00

Ferrophosphorus, electric, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base per gross ton with \$2 unitage 50.00

Ferrophosphorus, electric, 34% f.o.b. Anniston, Ala., per gross ton with \$2.75 unitage 65.00

Ferromolybdenum, per lb. Mo., del. 85c.

Calcium molybdate, per lb. Mo., del. 80c.

Silico spiegel, per ton, f.o.b. furnace, car lots \$36.00

Tom lots of less, per ton 41.00

Silico-manganese, gross ton, delivered:

2.50% carbon grade 90.00

2% carbon grade 95.00

1% carbon grade 105.00

Spot prices \$3 a ton higher

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	\$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	8c. to 8.50c.
Iron, low phos., Swedish, average 68% iron	9c.
Iron, basic or foundry, Swedish, average 65% iron	8c.
Iron, basic or foundry, Russian, aver. 63% iron (nom.)	9c.
Manganese, Caucasian, washed 62%	*23c.
Manganese, African, Indian, 50-52%	*21c. to 22c.
Manganese, Brazilian, 46 to 48%	*18c.

Per Net Ton Unit

Tungsten, Chinese wolframite, duty paid \$10.00

Tungsten, domestic scheelite \$8.00 to \$10.40

Chrome, 45%, Cr2O3, crude, c.i.f. Atlantic seaboard 16.00

Chrome, 48%, Cr2O3, c.i.f. Atlantic seaboard 18.00

*Quotations nominal in absence of sales.

Fluorspar

Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines \$10.00

No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines 12.00

Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid, \$16.00 to 16.75

Domestic, No. 1 ground bulk, 85 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines 30.00

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	\$9.00 to \$9.50
steel	7.25 to 7.75
No. 2 railroad wrought	9.00 to 9.50
Scrap rails	9.00 to 9.50
Rails 3 ft. and under	10.00 to 10.50
Sheet bar crops, ordinary	9.50 to 10.00
Compressed sheet steel	8.75 to 9.25
Hand bundled sheet steel	7.50 to 8.00
Hvy. steel axle turnings	7.50 to 8.00
Machine shop turnings	6.00 to 6.50
Short shov. steel turnings	6.00 to 6.50
Short mixed borings and turnings	6.00 to 6.50
Cast iron borings	6.00 to 6.50
Cast iron car wheels	8.00 to 8.50
Heavy breakable cast	8.00 to 8.50
No. 1 cast	9.50 to 10.50
Railr. knuckles and couplers	10.00 to 10.50
Rail. coil and leaf springs	10.00 to 10.50
Roller steel wheels	10.00 to 10.50
Low phos. billet crops	11.50 to 12.00
Low phos. sheet bar crops	11.50 to 12.00
Low phos. plate scrap	10.50 to 11.00
Low phos. punchings	11.00 to 11.50
Steel car axles	11.00 to 11.50

CHICAGO

Delivered Chicago district consumers:

	Per Gross Ton
Heavy melting steel	\$6.00
Shoveling steel	6.00

Progs, switches and guards..... \$6.00

Hydraulic comp. sheets..... 4.00 to 4.50

Drop forge flashings..... 4.00 to 4.50

No. 1 busheling..... 4.00 to 4.50

Roller car wheels..... 8.00 to 8.50

Railroad tires 8.00 to 8.50

Railroad leaf springs..... 8.00 to 8.50

Axis turnings 4.50 to 5.00

Steel couplers and knuckles 7.00 to 7.50

Coil springs 8.50 to 9.00

Axis turnings (elec. fur.) 5.50 to 6.00

Low phos. punchings 8.00 to 8.50

Importers Refute Charges of Dumping of Foreign Steel

(Concluded from page 696)

definitely, as did witnesses who followed him, that steel is not being dumped from Belgium and Luxembourg. If the dumping were found against other countries, he said, the business would go to Belgian and Luxembourg mills and would not change the volume of incoming shipments. Consequently, he added, the domestic industry would not be benefited.

Belgium and Luxembourg do not enjoy adequate protection, but have protection of only about 5 per cent on iron and steel, it was declared by E. Leon of the Amerlux Steel Products Corp., New York, in seeking to refute evidence given by domestic interests. Those countries, he said, are compelled to export, but cannot penetrate beyond the American seaboard. Neither country dumps steel into the United States, Mr. Leon said. Luxembourg is allowed a market in Belgium, it was added, but has no home market. Replying to a question by Mr. Dow, Mr. Leon said f. o. b. prices in Belgium and Luxembourg for home consumption are greater than f. o. b. prices on steel exported to the United States.

William Manealoff of Manealoff & Co., New York, said he went to Europe to see if there is any ground for the charge of dumping. He said he found "especially that there is no truth to the charge as it relates to Belgium." He said about 90 per cent of the products he handles comes from that country.

Security companies in exacting 150 per cent of invoice values before bonding place importers in a serious position, Mr. Manealoff declared. He said that on one side consumers are demanding delivery of their steel and the manufacturers abroad are insisting that they take shipments. Yet the bond requirement was held to be impossible for importers to meet and inasmuch as they give irrevocable letters of credit they face destruction of their business.

"You will not be required to put up anti-dumping bonds unless the appraiser issues dumping notices," said Mr. Dow.

"We do not feel that there is any foundation for the charge of dumping," declared J. C. Devereaux of the American Steel Export Co., Inc., New York. "Any additional burden in the way of bonds would impose hardship. We have employees, the same as domestic mills. We have every reason to believe that prices in the home markets abroad are the same as the prices at which steel is sold here."

B. Hoersgen of the Seamless Tube Co., New York and Pittsburgh, said that while imports are less than 2

per cent of domestic production, some of the incoming products are not competitive with domestic steel. He specifically named hot-rolled and cold-drawn seamless tubes, coming chiefly from Germany but also from France and England. He said that American mills are friendly to these products. The prices of the foreign seamless tubes, it was stated, are the same as the American prices, while the home market price is as high or higher. They have an international price, Mr. Hoersgen said, and American mills were declared to belong to the European cartel on seamless tubes. One large domestic mill, he said, took a tonnage for Iraq at about 50 per cent less than the American home market price.

Albert Leo of the American Petro-metal Co., New York, said his company handles French steel mostly and that there is no dumping against America. All Continental steel export prices, he declared, are regulated by the Brussels exchange. Belgian home market prices, Mr. Leo said, are somewhat lower than the prices at which Belgian mills sell in the United States.

He submitted a letter from a domestic fabricator who complained that he is unable to buy steel from and compete with manufacturers who both make and fabricate material.

Mr. Dow stated that unless the Government secured itself sufficiently in the way of bond requirements it would not be able to recover the revenue due it. He said this situation has developed in a number of cases under the regular re-delivery bond requirements.

Scrap Trade Supports Charge of Steel Dumping

Supporting domestic iron and steel makers in their plea for relief from alleged dumping, Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, last Friday told the Bureau of Customs that the domestic industry's recovery has been halted by dumping of foreign steel. He also declared that imports of pig iron from Holland, India and other countries have practically destroyed the home market for blast furnace scrap.

Mr. Schwartz declared that the loss of a market for 400,000 tons of scrap was suffered by reason of steel imports in 1931 and 1932. This was said to have meant the loss of one week's work for about 50,000 men "engaged in the collection, sorting and preparation of scrap, in addition to the loss of freight revenue to the railroads of over \$800,000."

Subsequent to the hearing of importers, the bureau announced that

the New York appraiser had issued notices of suspected dumping of bars and bands from the Saar Basin. Therefore these products, like wire netting and steel channels from the Saar Basin, cannot be entered at any port in the United States unless importers provide bonds under Section 623 of the Hawley-Smoot act. The bureau has also ordered the withholding of appraisals of manganese ore from Russia, India, South Africa and Brazil.

Bethlehem to Take Over Seneca Plant At Once

Acquisition of the Seneca Iron & Steel Co., Bladell, N. Y., by the Bethlehem Steel Corp., was approved by the Bethlehem directors last week, and it is planned to take title to the properties immediately. The manufacturing activities will become a division of Bethlehem's Lackawanna plant, which is nearby, under T. Burns, general manager at Lackawanna.

K. L. Griffith, formerly president of Seneca Iron & Steel Co., has been appointed manager of sheet sales, under Paul Mackall, vice-president, and H. G. Walton, general manager of sales, to handle all sheet products made by Bethlehem. He will be located at the home office, Bethlehem, Pa.

Automobile Output At Low in September

WASHINGTON, Nov. 1.—The output of motor vehicles in the United States in September totaled only 84,141, the lowest of the year, according to reports received by the Bureau of the Census from manufacturers. The passenger car production was 64,735 and the truck output was 19,393. The August production of motor vehicles was 90,324, of which 75,898 were passenger cars and 14,417 were trucks, the latter having been exceeded by 4976 in September.

Production of motor vehicles in the first nine months of 1932 totaled 1,157,029, against 2,119,188 in the corresponding period of last year.

Canadian production in September totaled 2342 motor vehicles against 4067 in August. In the first nine months of the present year the Canadian output was 53,550 against 77,502 in the corresponding period of last year.

Foundry equipment orders for September were indexed by the figure 11.9, according to monthly report of the Foundry Equipment Manufacturers Association. The three-month average of gross orders for the third quarter was 16.4. The association derives its base 100 from the average monthly shipments for 1922, 1923 and 1924.

Exports of Iron and Steel from the United States

(In Gross Tons)

	September		Nine Months Ended September	
	1932	1931	1932	1931
Pig iron.....	54	668	1,918	5,140
Ferromanganese.....	6	36	26	1,243
Scrap.....	5,995	10,000	158,159	110,482
Pig iron, ferroalloys and scrap.....	6,055	10,704	160,103	116,865
Ingots, blooms, billets, sheet bar...	143	950	1,409	3,461
Skelp.....	212	3,577	17,006	47,941
Wire rods.....	2,313	2,675	12,115	26,989
Semi-finished steel.....	2,668	7,202	30,530	78,391
Steel bars.....	978	2,000	11,792	30,664
Alloy steel bars.....	72	37	1,312	2,619
Iron bars.....	28	98	528	903
Plates, iron and steel.....	442	2,523	7,963	38,004
Sheets, galvanized steel.....	1,964	2,889	18,421	38,552
Sheets, galvanized iron.....	139	202	1,098	3,689
Sheets, black steel.....	3,449	6,639	30,953	75,514
Sheets, black iron.....	160	234	2,123	5,083
Hoops, bands, strip steel.....	1,043	1,098	14,449	23,451
Tin plate;terne plate.....	5,100	7,239	29,551	65,947
Structural shapes, plain material...	993	9,520	12,530	77,948
Structural material, fabricated.....	1,509	1,934	13,664	27,405
Tanks, steel.....	336	115	1,892	10,368
Steel rails.....	864	1,576	10,128	25,869
Rail fastenings, switches, frogs, etc.	192	307	3,172	6,110
Boiler tubes.....	231	656	2,627	5,841
Casing and oil-line pipe.....	2,193	1,126	14,271	19,843
Pipe, black and galvanized, welded steel.....	2,868	7,201	20,988	41,869
Pipe, black and galvanized, welded iron.....	341	594	3,146	4,438
Plain wire.....	491	835	6,678	10,723
Barbed wire and woven wire fencing	1,367	1,005	14,080	20,290
Wire cloth and screening.....	44	55	488	716
Wire rope.....	104	211	1,143	2,056
Wire nails.....	456	340	5,775	6,125
Other nails and tacks.....	211	271	2,622	2,959
Horseshoes.....	3	62	60	127
Bolts, nuts, rivets and washers, except track.....	223	272	2,002	3,988
Rolled and finished steel.....	25,801	48,139	233,456	551,701
Cast iron pipe and fittings.....	495	1,144	6,386	19,059
Malleable iron screwed fittings.....	141	218	1,290	3,792
Car wheels and axles.....	69	523	2,089	5,250
Iron castings.....	200	256	1,813	3,449
Steel castings.....	52	99	1,018	2,828
Forgings.....	324	533	3,060	6,110
Castings and forgings.....	1,281	2,773	15,656	40,488
All other.....	233	963	3,662	5,945
Total.....	36,038	69,781	443,407	792,790

Imports of Iron and Steel Products into the United States

(In Gross Tons)

	September		Nine Months Ended September	
	1932	1931	1932	1931
Pig iron.....	7,250	5,104	90,324	70,197
Sponge iron.....	6	107	...	210
Ferromanganese*.....	1,163	976	17,486	21,242
Ferrosilicon†.....	...	...	149	620
Other Ferroalloys.....	...	22	44	96
Scrap.....	4,390	746	672	1,550
Pig iron, ferroalloys and scrap.....	12,809	7,266	118,218	107,874
Steel ingots, blooms, billets, etc....	91	1,661	2,186	15,011
Wire rods.....	862	593	5,447	5,578
Semi-finished steel.....	953	2,254	7,633	20,589
Concrete reinforcement bars.....	1,181	3,571	23,129	31,790
Hollow steel bars.....	125	127	689	1,277
Merchant steel bars.....	1,193	4,676	23,636	37,206
Iron bars.....	38	30	421	722
Iron slabs.....	...	...	11	40
Boiler and other plate.....	33	1	376	729
Sheets, skelp and saw plate.....	1,817	1,852	14,562	15,204
Tin plate.....	5	34	7,215	147
Structural shapes.....	3,109	5,266	24,249	55,643
Sheet piling.....	...	2	1	581
Rails and rail fastenings.....	2,524	303	4,916	4,444
Welded pipe.....	239	888	3,468	5,976
Other pipe.....	190	223	2,106	6,307
Barbed wire.....	748	404	11,195	6,354
Round iron and steel wire.....	107	138	1,526	2,093
Flat wire and strip steel.....	88	74	1,191	522
Wire rope and strand.....	143	177	1,346	1,434
Other wire.....	48	21	737	440
Hoops and bands.....	3,062	2,857	24,558	16,262
Nails, tacks and staples.....	762	446	7,747	6,799
Bolts, nuts and rivets.....	12	57	148	756
Other finished steel.....	26	...	95	219
Rolled and finished steel.....	15,450	21,147	153,322	194,945
Cast iron pipe and fittings.....	...	236	201	6,351
Castings and forgings.....	29	169	794	1,478
Total.....	29,241	31,072	280,168	331,237

*Manganese content only.

†Chromium content only.

‡Silicon content only.

Electrode Holder for Hydrogen Welding

(Concluded from page 692)

is said to make it easier for an operator to work in confined places, and the flexible electrodes to lower materially the operating cost by reducing breakage.

The flexible tungsten electrode is made up of several tungsten wires stranded together, and is so flexible that the ends of a 12-in. length can be brought together without giving the electrode a definite set. The consumption is the same as that of the rod-type electrode.

In the new holder, the electrode is easily adjusted by means of the screw feed ejector, and can be consumed to a length of approximately 1½ in., at which point it will drop out of the nozzle tip. Before this occurs, a new electrode has been mechanically inserted into the ejector and a few turns of the screw feed places the electrode in welding position. Another feature of the new holder is that the hydrogen tubes may be detached easily from the handle, permitting the purchaser to make any necessary replacements at his own plant. Adjustment for controlling the position of the fan-shaped welding flame is also a feature of the new holder. By a slight turn of a thumb screw the flame can be controlled to be either parallel to or at right angles with the axis of the handle.

Trackwork Shipments at Low Point in September

Shipments of trackwork for T-rail track of 60 lb. and heavier in September, amounting to only 1430 tons, were the smallest reported for any month during the past five years, according to the American Iron and Steel Institute, and compare with previous low records of 1797 tons in August and 1890 tons in July. Similar shipments in the third quarter aggregated 5117 tons, against 11,805 tons in the third quarter of 1931, while the aggregate of 22,423 tons in the first nine months of the current year compares with 54,418 tons shipped in the corresponding period of last year.

Freyn Engineering Co., 310 South Michigan Avenue, Chicago, has received contract from Woodward Iron Co. for four pressure burners for installation on hot blast stoves at the latter company's No. 1 blast furnace at Woodward, Ala. The Freyn company has also received an order from Tata Iron & Steel Co. for three electric roll heaters for installation at the Tata mills at Jamshedpur, India.

PLANT EXPANSION AND EQUIPMENT BUYING

Machine Tool Trade Gained in October

Improvement Slight but It Has
Come From All Sections
of the Country

WHILE machine tool business did not improve materially in October, there were scattered evidences of the fact that metal-working manufacturers are taking greater interest in the rehabilitation of their equipment. One large builder of machine tools states that its October business was the largest for any

month since last February. Most of its orders were for single machines, but they came from nearly all sections of the country. Machinery dealers also report that October orders showed a slight gain over those of September.

Preparation for the production of new automobile models has not thus far produced very much machine tool

business, but there are expectations that some sizable orders will come out of the Detroit territory soon.

The Latrobe Tool Co., Latrobe, Pa., and the J. M. Carpenter Tap & Die Co., Pawtucket, R. I., affiliated concerns, have placed orders for about \$50,000 worth of machinery. These companies make taps, dies, etc.

◀ NORTH ATLANTIC ▶

Superintendent of Lighthouses, Staten Island, N. Y., asks bids until Nov. 10 for 300 acetylene cylinders, each 180 cu. ft. capacity (Proposal 41693); until Nov. 11, 10 steel bodies for gas buoys, varying from 7 to 9 ft. diameter, and 18 to 38 ft. long, each with skeleton steel lantern tower and bottom counterweight (Proposal 41696).

New Amsterdam Brewing Co., 10 East Fortieth Street, New York, Herbert L. Noll, president, recently organized, has preliminary plans by C. Dale Badgley, 24 West Sixty-ninth Street, architect, for new brewing plant, with stock house, bottling works, power house, machine shop and other units. Cost close to \$1,000,000 with equipment.

Champion Stamping & Enameling Co., New York, has been organized by Simon Greenhill, 1685 Topping Avenue, Bronx, and associates, to manufacture enameled steel and iron specialties.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 15 for one hydraulic pipe bender (Schedule 9010) for Brooklyn Navy Yard.

United Dry Docks, Inc., 11 Broadway, New York, has secured contract for construction of 1200-ton welded steel cargo ship, 185 ft. long, with 43-ft. beam, to be operated by Diesel engines, for New Jersey Clay Products Co., South River, N. J., and will carry out work at Staten Island shipyard.

Nelson Brothers Metal Ornaments, Inc., Brooklyn, has been organized by Benjamin Nelson, 464 East Ninety-sixth Street, and Leo Nelson, 58 East Fifty-second Street, Brooklyn, to manufacture metal goods.

Commanding Officer, Pictinny Arsenal, near Dover, N. J., asks bids until Nov. 8 for four oven units, quantity of wire, switches, etc. (Circular 69), steel flanges, gate valves, relief valves, pipe bends, etc. (Circular 68).

Berst-Forster-Dixfield Co., Grand Central Terminal, New York, manufacturer of paper products, etc., has superstructure under way for two new three-story units at mill at Plattsburg, N. Y., 153 x 210 ft., and 40 x 300 ft., including improvements in present plant. Cost about \$200,000 with equipment. James Leek Co., 211 South Eleventh Street, Minneapolis, is general contractor; Homan F. Hallock, Oswego, N. Y., architect and engineer.

Renotex Machine Corp., New York, has been organized by Isaac Stiel and Alfred Reine-man, 127 West Seventy-ninth Street, to manufacture machinery and operate a general machine works.

United States Engineer Office, First District, New York, asks bids until Nov. 7 for two forged steel pump shafts (Circular 113).

Board of Education, Essex County Vocational Schools, Hall of Records, Newark, Robert O. Beebe, director, asks bids until Nov. 9 for machine and hand tools; machine, sheet metal, automobile mechanics, electrical and other shop supplies; steel, iron, etc.; lockers, com-

bination padlocks and other equipment for County vocational schools.

Franklin Stove Mfg. Co., Perth Amboy, N. J., care of Smith & Schwartz, State Street, has been organized by Harry Lubern, Carteret, N. J., and associates, to manufacture stoves, ranges, etc.

J. Chein & Co., 310 Passaic Avenue, East Newark, N. J., manufacturers of metal toys, are running on full time production schedule, with normal working quota.

State Purchase Commissioner, E. J. Quigley, State House, Trenton, N. J., asks bids until Nov. 14 for cast aluminum tablets.

John A. Roebling's Sons Co., Roebling, Trenton, N. J., low bidder on contract to furnish steel cable and subsidiary steel work for Golden Gate bridge, San Francisco, at \$5,855,000, plans erection of branch plant at last noted place for production of wire, cable, etc., required for work. Of contract amount noted, company proposes expenditure of about \$500,000 for equipment and supplies.

Commanding Officer, Frankford Arsenal, Philadelphia, asks bids until Nov. 7 for two caliber 0.50 case first and second end trimming machines (Circular 134).

Glen Alden Coal Co., Scranton, Pa., is considering rebuilding coal breaker in Wilkes-Barre Township, Pa., recently destroyed by fire. Loss over \$500,000 with equipment.

Board of Public Education, Administration Building, Philadelphia, asks bids until Nov. 7 for steel cabinets and other school equipment. Edward Merchant is secretary and business manager.

Department of Public Service, City Hall, Harrisburg, Pa., Samuel F. Hassler, director, asks bids until Nov. 12 for one-story addition to pipe line shop.

Sharples Solvents Corp., Twenty-third and Westmoreland Streets, Philadelphia, has leased 10-acre tract at Wyandotte, Mich., as site for new plant, for which superstructure will begin at once. Unit will be used for production of amyl alcohol and allied products. Cost over \$85,000 with machinery. Company will remove plant from Belle, W. Va., to new location.

Division of Purchase, City Hall, Buffalo, Norman C. Sprickman, director, asks bids until Nov. 9 for one heavy-duty, motor-driven geared-head lathe for Department of Public Works, Division of Water.

Daylite Tubes, Inc., Buffalo, has been organized by Rudolph B. Flersheim, 690 West Ferry Street, and Albert M. Degenhart, 2377 Delaware Avenue, to manufacture electric signs and displays.

Houde Engineering Corp., 537 East Delavan Avenue, Buffalo, manufacturer of shock absorbers, etc., plans early advance in production schedule for equipment for new automobile models.

Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y., manufacturer of boilers, furnaces, heaters, etc., is running on high production

schedule at branch plant at Oswego, N. Y., with close to normal working quota.

Flameless Heater Corp., Buffalo, has been organized by Albert F. Krause, 282 Parkdale Avenue, and Richard Krause, 154 Anderson Place, capital \$100,000, to manufacture heaters for domestic service, parts, etc.

William M. Rebuth Co., Inc., 375 Pearl Street, New York, mentioned in THE IRON AGE of Oct. 20, p. 640, as about to engage in manufacture of metal products, states that its business will be confined to that of mill agents, and it will do no manufacturing. Company will serve as distributor for steel products, including such specialties as nickel and chrome plated steel.

Wallington Machine Co., Inc., manufacturer of special machinery, has moved from Canal Street, Passaic, to 75 Paterson Avenue, Wallington, N. J. O. L. Fowler heads company.

◀ SOUTH ATLANTIC ▶

American Oil Co., American Building, Baltimore has approved plans for bulk oil storage and distributing plant at Culpeper, Va. Cost over \$25,000 with tanks and equipment.

Chief of Engineers, Munitions Building, Washington, asks bids until Nov. 9 for one crane and trailer unit (Circular 6).

Appalachian Electric Power Co., Roanoke, Va., has secured permission for erection of hydroelectric generating plant on New River, Pulaski County, near Radford, Va., where work on power dam was begun recently. Station will have ultimate capacity of 26,000 hp. and will cost about \$10,000,000 with steel tower transmission lines. Authority granted provides that project be completed in 36 months.

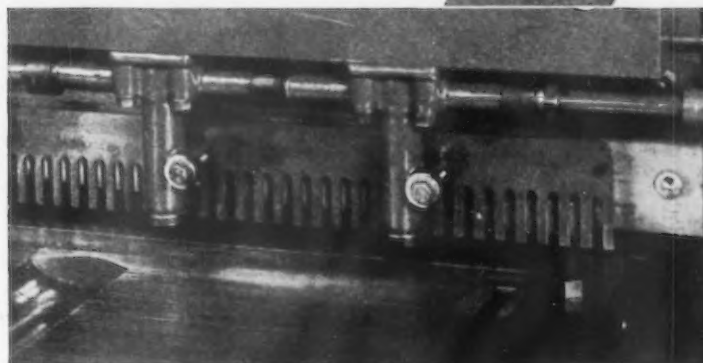
Construction Service, Veterans' Administration, Washington, asks bids until Nov. 7 for one platform scale (Proposal 176-M), three tumbler driers with cylinder, six extractors, 12 presses, six washing machines, etc. (Proposal 148-M); until Nov. 8, one track type crawler tractor, with snow plow (Proposal 139-M); until Nov. 10, two laundry presses (Proposal 174-M).

Potomac Electric Power Co., Washington, has awarded general contract to Skinner & Garrett, 1719 I Street, for two-story power substation and repair shop at Sligo Mill and Ray Roads. Cost over \$40,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 8 for one turret lathe (Schedule 8836), one motor-driven gear hobbing machine (Schedule 8840), structural steel towers, sections and heads (Schedule 8835) for various navy yards; until Nov. 8, 7800 lb. sheet copper (Schedule 8977) for Charleston, S. C. Navy Yard; until Nov. 15, air hose clamps and couplings (Schedule 8994), two motor-driven trolley electric hoists (Schedule 8979), four high pressure air-reducing valves (Schedule 9008), brass, bronze, copper and steel wire (Schedule 9007), steel wire nails (Schedule 9013), 25,600 electric

CINCINNATI PUTS HYDRAULIC HOLDDOWNS ON SHEARS

Only the plungers move to clamp the sheet.
The knife guard can be mounted in front of
or behind the holddowns.



HERE is an All-Steel Squaring and Slitting Shear with hydraulic holddowns that clamp the sheet with heavy uniform pressure.

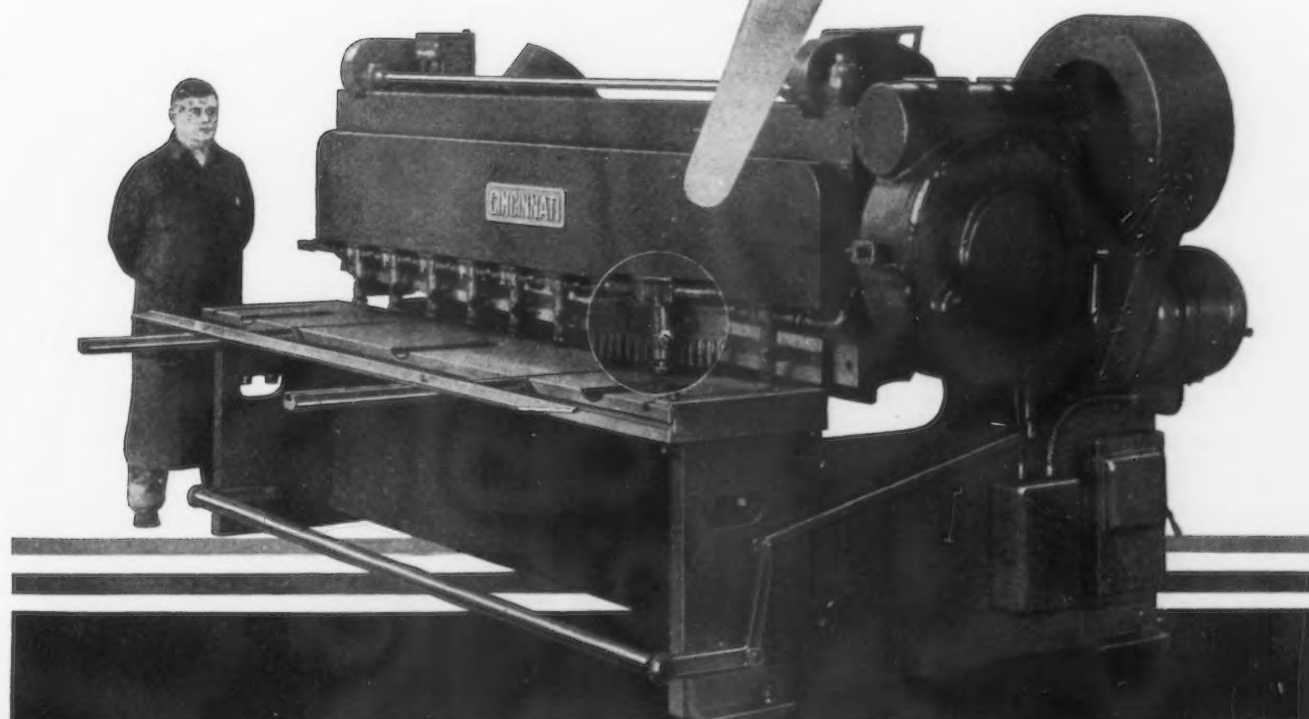
The plungers really hold the sheet, no creepage, no kick out, you'd think the sheet was pinned to the table... that means accuracy.

They are fast too. They start down, they hold the sheet while the knife cuts, they release when the knife is at the bottom, all in just a half a second... that's speed.

Imagine a dozen fast one-ton hydraulic presses right on the shear table and you've got it.

Read about this great advance in shearing speed and accuracy. Let us send you an illustrated catalog.

THE CINCINNATI SHAPER CO.
CINCINNATI, OHIO



flashlights (Schedule 8990) for Eastern and Western yards.

James T. Swann, 314 Madison Street, Tampa, Fla., has secured permit for erection of a mechanical precooling plant in Estuary district. Cost about \$25,000 with machinery.

Pendleton Mfg. Co., La France, S. C., has approved plans for new steam power plant at textile mill, to include installation of 300-hp. watertube boiler and auxiliary equipment. Cost about \$25,000.

City Council, Roanoke Rapids, N. C., plans installation of pumping machinery and other equipment in new municipal waterworks. Fund of \$365,000 is being arranged for project.

Division of Purchase, Sales and Traffic, Department of Agriculture, Washington, asks bids until Nov. 8 for drilling and casing for one 10-in. well at Brooksville, Fla. (Proposal 3529); until Nov. 11, one tractor, full crawler, wide gage type, f.o.b. factory (Proposal 3541).

Public Works Department, Charleston, S. C. Navy Yard, J. T. Mathews, Lieut.-Commander, plans extensions and improvements in local marine railway. Cost about \$50,000. A 15-ton locomotive crane will be installed, to be purchased by Bureau of Yards and Docks, Navy Department, Washington.

◀ SOUTHWEST ▶

Farmers & Merchants River Terminal, Inc., Stuttgart, Ark., plans installation of conveying, loading and other mechanical-handling equipment at terminal plant at Preston's Ferry.

Char-Lite Mfg. Co., St. Louis, has been organized by Henry L. Dahm, 7248 St. Andrews Road, and associates to operate local plant for production of fuel briquets.

Oklahoma Portland Cement Co., Ada, Okla., is running on increased production schedule, giving employment to about 400 men.

Donleon Oil & Refining Co., 814 Cotton Grain Exchange Building, Oklahoma City, W. U. Paul, secretary and treasurer, recently organized, has acquired land about four miles from city for new oil refinery, with cracking unit for gasoline production. Work will begin early in December. Cost close to \$100,000 with equipment.

Associated Grocers, Inc., 809 East Twenty-third Street, Kansas City, Mo., has leased two-story and basement building, 125 x 142 ft., to be erected at Twentieth Street and Troost Avenue by John H. Thompson Construction Co., 114 West Tenth Street, for new storage and distributing plant, and plans installation of conveyors, unloading and other equipment, lift trucks, cold storage machinery, etc. Cost about \$100,000 with equipment. Fred Wallace, 114 West Tenth Street, is architect.

Ozark Chemical Co., Cosden Building, Tulsa, Okla., is considering new plant for production of sodium sulphate in vicinity of Soda Lake, near Monahans, Tex., to cost over \$150,000 with machinery.

Midwest Stoker & Equipment Co., St. Louis, has been organized by Francis J. Morrish, Kirkwood, Mo., and associates to manufacture stokers, parts and kindred equipment.

City Council, Oklahoma City, Okla., Albert McRill, city manager, plans installation of chemical treatment machinery and mechanical equipment at municipal sewage plants, for purification service. Cost about \$69,000.

Quartermaster, Eighth Corps Area, Fort Sam Houston, San Antonio, Tex., asks bids until Nov. 23 for one deep-well water pump and accessory equipment for Hensel Field, Tex.

Common Council, Burnet, Tex., plans installation of pumping machinery, pipe lines and other equipment in connection with new municipal water system. Cost over \$45,000. J. W. Beretta Engineers, Inc., National Bank of Commerce Building, San Antonio, Tex., is consulting engineer.

Corpus Christi, San Angelo & Roswell Railway Co., Corpus Christi, Tex., has been reorganized and will be headed by new interests, including R. L. Allen, vice-president. Plans are under way for construction of line from Corpus Christi to Roswell, N. M., and work will begin soon. Line will be about 550 miles long, with engine houses and repair shops at different points. Cost over \$4,500,000.

Southern Boiler & Machinery Co., Dallas, Tex., has been organized by P. N. Walton, Dallas, and associates to manufacture boilers, tanks and other plate products.

Texas State Highway Department, Austin, Tex., has asked bids on general contract for one-story equipment storage, distributing and repair building at Abilene, Tex.

◀ CENTRAL DISTRICT ▶

Latrobe Tool Co., Latrobe, Pa., manufacturer of drills, reamers, taps, etc., and affiliated interest, J. M. Carpenter Tap & Die Co., Pawtucket, R. I., are running on 24-hr. capacity schedule, with full working quotas. Companies will carry out expansion and improvement and are placing orders for equipment to cost about \$50,000.

Pennsylvania Railroad Co., has reopened car repair shop at New Castle, Pa., idle for several months.

West Penn Power Co., West Penn Building, Pittsburgh, has applied for permission to construct transmission line across Monongahela River, Dunkard Township, about 85 miles from Pittsburgh, with steel tower supports, etc.

Gulf Refining Co., Frick Annex, Pittsburgh, and Toledo, Ohio, has approved plans for extensions in oil storage and distributing plant at Toledo, including installation of six 80,000-bbl. capacity steel tanks, and auxiliary equipment. Cost close to \$100,000.

Peninsular Grader Blade Co., Cleveland, care of Sammon & Stendel, 300 Engineers Building, has been organized by H. M. Crellin and S. L. Bloomfield, to manufacture road-grading equipment.

City Council, Cuyahoga Falls, Ohio, J. G. Murray, service director, has asked bids on general contract for one-story municipal electric light and power plant, 57 x 100 ft. Cost about \$300,000 with equipment. N. C. Bell, City Hall, is engineer.

General Fireproofing Co., Youngstown, Ohio, manufacturer of steel office equipment, is advancing production, reinstating about 100 men.

Wellman Engineering Co., 7000 Central Avenue, Cleveland, has secured contract from Bureau of Yards and Docks, Navy Department, Washington, for experimental mobile steel telescopic airship mooring mast for Naval Air Station, Sunnyvale, Cal., at \$118,000.

DeVilbiss Co., 3700 Detroit Avenue, Toledo, Ohio, manufacturer of spraying devices and equipment, plans rebuilding part of plant recently damaged by fire. Loss about \$20,000.

Contracting Officer, Material Division, Wright Field, Dayton, Ohio, asks bids until Nov. 14 for steel aircraft bolts, clevis bolts, aircraft plain nuts, aircraft castle nuts, flat head pins and washers (Circular 169), 5300 ft. aluminum tubing (Circular 182), 10,600 lb. sheet lead (Circular 186), electric motor (Circular 175); until Nov. 15, one power paper cutter (Circular 188), 35,000 lb. carbon steel angle iron (Schedule 190), 3000 cook assemblies, primer shut-off (Circular 189), 200 smoke screen discharge tube hose assemblies (Circular 191); until Nov. 16, 134,000 ft. cable (Circular 177), turnbuckle barrels, clevis, clips, turnbuckle eyes, turnbuckle assemblies, cable shackles, etc. (Circular 183), 100 target glider wing assemblies (Circular 180).

Canady Sound Appliance Corp., Cincinnati, care of Johnson & Levy, St. Paul Building, has been organized by Robert Goldreich and Robert J. Schwarz, Cincinnati, to manufacture sound equipment and devices.

Water Department, City Hall, Cincinnati, A. S. Hibbs, superintendent, plans early call for bids for steel plate covering for battery of six water tanks at Mount Airy. Later similar covering will be purchased for all water tanks and reservoirs of municipal system. Entire project will cost over \$100,000. C. A. Eberling, City Hall, is engineer.

Noblitt-Sparks Industries, Inc., Columbus, Ind., manufacturer of automobile equipment, has advanced production schedule in different departments: manufacture of automobile heaters has been increased from 1500 to 2000 a day.

Chambers Corp., Shelbyville, Ind., has been organized by John E. Chambers, Samuel Kennedy, Shelbyville, and associates to manufacture stoves and kindred equipment.

Delco-Remy Corp., Anderson, Ind., manufacturer of automobile lighting and starting equipment, is arranging for increased production this month. Guide Lamp Corp., Anderson, manufacturer of automobile headlights, etc., an affiliated organization, will also advance output schedule.

Alloy Steel Spring & Axle Co., Jackson, Mich., has plans for extensions and improvements in powerhouse, including additional equipment. J. D. Swartout, Saginaw, Mich., is engineer.

Melling Forging Co., Lansing, Mich., will carry out expansion and improvements, including installation of new forging press, furnace and accessory equipment. Cost about \$40,000.

Koepe Brothers, Flint, Mich., general contractors, have plans for new works for production of conveyor systems for automatic display of food products and other merchandise. New unit will be used primarily for assembling. J. W. Cook Corp., Flint, is engineer.

City Tool Engineering, Inc., 1207 Wayburn Street, Detroit, has been organized by Albert N. Lundberg, 3636 Nottingham Road, and associates to manufacture tools, dies, drills and kindred products.

Michigan Sugar Co., Caro, Mich., has resumed operations at beet sugar mill, giving employment to about 350 persons, two shifts a day.

City Council, Ludington, Mich., is planning installation of pumping machinery and stand-pipe for municipal water system. Bonds will be voted at November general election.

Commerce Pattern Foundry & Machine Co., 2211 Grand River Boulevard, Detroit, is running on close to normal production basis, with day and night shifts. Considerable part of output is for electric refrigeration industry.

McDonald Tool Co., Detroit, has been organized to take over and succeed to McDonald Tool & Engineering Co., 1537 Temple Street, and will specialize in manufacture of dies, jigs, tools, fixtures, etc.

Eureka Vacuum Cleaner Co., Dewey and Hamilton Streets, Detroit, has resumed production after shut-down for nearly a year. Operations will be on 10-hr. day basis, with employment of large working force.

Armstrong Spring Co., Flint, Mich., manufacturer of automobile springs, has filed notice of company dissolution under State laws.

Colson Co., Elyria, Ohio, which has been operated under a friendly receivership since May 13, was adjudged solvent in Federal Court of Northern District of Ohio and action in involuntary bankruptcy brought against Colson Co. has been dismissed at expense of petitioners. An increasing volume of business is reported. Several new products are in preliminary stages of production.

◀ MIDDLE WEST ▶

Board of Village Trustees, Wilmette, Ill., asks bids until Nov. 15 for equipment for municipal waterworks, including engine-driven electric generating unit with accessories, motor-driven pumping machinery and auxiliaries, filter and chemical equipment, valves, piping, transformers, switching equipment, etc. Pease, Greeley & Hansen, 6 North Michigan Avenue, Chicago, are consulting engineers.

Alloy Steel Gear & Pinion Co., 4847-49 West Division Street, Chicago, has been organized by Alfred E. Davey and Anton M. Scharak to manufacture gears and kindred equipment.

Gellman Mfg. Co., Rock Island, Ill., manufacturer of wrenches and other tools, has awarded general contract to Alcott & Johnson, Rock Island, for one-story foundry addition. Cost about \$40,000 with equipment. Cervin & Stuhr, Safety Building, are architects.

Liquified Natural Gas Corp., Minneapolis, has applied to City Council, Wisconsin Rapids, Wis., to extend franchise of American Gas Construction Co., recently expired, and contemplates installation of gas distributing plant and system.

City Council, Oelwein, Iowa, is considering installation of a municipal electric light and power plant and system. Cost close to \$400,000 with equipment. Proposition will be voted at November general election.

Public Service Co. of Colorado, Denver, plans rebuilding part of steam-operated electric generating plant at Sterling, Colo., recently damaged by fire.

Board of Education, School District No. 6, Deer River, Minn., plans installation of manual training department in new two-story and basement school. Fund is being arranged. Citizens will vote on proposition at November general election. Sullivan & Orrfitt, Palladio Building, Duluth, Minn., are architects.

United Parts Mfg. Co., 2023 South Michigan Avenue, Chicago, has been organized by Cornelius Overwater and Milton J. Cabath to manufacture automobile parts and equipment.

City Council, South Sioux City, Neb., is considering report submitted by Buell & Winter Engineering Co., Insurance Exchange Building, Sioux City, Iowa, recommending construc-



Cut costs! Cut costs! The insistent demand for cost reduction challenges every detail of product design and manufacture. A number of manufacturers have made very definite savings by simplifying their process or product through the use of special rolled shapes. Some have been able to eliminate complicated jobs of fabrication. Others have found they could greatly reduce or entirely eliminate high machining costs.

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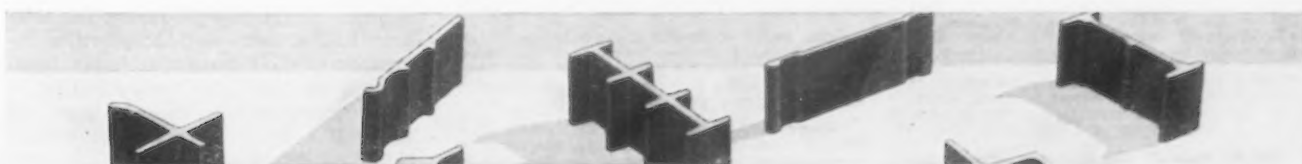
you. Those pictured here are but a few of the many hundred unusual sections we roll for manufacturers of every type of product—door hinges, magnetos, typewriters, baby carriages, automobiles, threshing combines . . . an almost endless list.

Perhaps in the manufacture of your product there is a step that can be eliminated or simplified by the use of a rolled shape, designed to meet your individual requirements . . . Carnegie engineers will welcome the opportunity of discussing this subject with you.

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tion of municipal electric light and power plant. Cost about \$100,000 with equipment.

Iowa Packing Co., S. E. Eighteenth and Maury Streets, Des Moines, Iowa, has plans for one-story machine and repair shop at meat-packing plant, 74 x 96 ft., portion to be used for garage for company trucks.

City Council, Villisca, Iowa, is planning a municipal electric light and power plant. Cost about \$150,000. Citizens will vote on project at November general election.

Allis-Chalmers Mfg. Co., Milwaukee, has appropriated \$200,000 for immediate use in general plant improvement under program of National Committee on Industrial Rehabilitation. **Louis Allis Co.**, maker of electric motors, has set aside \$20,000 for immediate use. Among others engaging in similar work are **Heil Co.**, Bucyrus-Erie Co., and Falk Corp.

Fairbanks, Morse & Co., Chicago, are adding new division to main works at Beloit, Wis., for manufacture of automatic stokers. Fifty employees have been recalled, bringing working force to about 1000, level maintained during past two years.

Solar Corp., Beaver Dam, Wis., manufacturer of storage batteries, paints, etc., has leased former plant of Hamilton Metalplane Co., West Pierce Street, Milwaukee, and beginning Dec. 1 will consolidate production now carried on in Beaver Dam and Minneapolis, Minn. Plant at Beaver Dam burned recently and production has been carried on there in quarters leased from Western Malleable Co.

Agner Simplex Co., Burlington, Wis., has been organized by R. C. Agner, 557 Conkey Street, to manufacture line of automotive devices, chiefly at present a new type of automobile crankcase draining wrench. Company is now working on initial order for 60,000 units for Sears, Roebuck & Co.

Minnesota Mining & Mfg. Co., St. Paul, Minn., has taken over property of Wausau Abrasives Co., Wausau, Wis., including quartz mills, and will spend about \$50,000 in new equipment, including machinery for production color quartz, artificially colored material used for surfacing composition roofing, in addition to general line of abrasives. **Harvey Nelson** is general superintendent at Wausau.

Automatic Products Co., 121 North Broadway, Milwaukee, is installing complete machine shop equipment and increasing floor space from 7000 to 10,000 sq. ft. to add to facilities for machined castings, stampings or turret lathe work in addition to present output of complete assemblies of electrical or mechanical devices. Most of immediate equipment needs have been covered. **R. W. Johnson** is president.

Nekoosa-Edwards Paper Co., Nekoosa, Wis., is starting work on plant extension, 60 x 123 ft., two stories and basement, for finishing, storing and shipping finer grades of paper stock. **John E. Alexander** is first vice-president and general manager.

Frank Garber Iron & Metal Co., Wisconsin Rapids, Wis., is preparing to build one-story warehouse, 40 x 130 ft. this fall or next spring.

◀ NEW ENGLAND ▶

Baird Machine Co., Bridgeport, Conn., manufacturer of machine tools, tumbling barrels, etc., has plans for two one-story additions to plant at Stratford, 100 x 100 ft. and 33 x 100 ft., respectively. **Fletcher-Thompson, Inc.**, Bridgeport, is architect and engineer.

Ferrara Auto Spring Works, Inc., Springfield, Mass., has been organized by Louis F. and Fred A. Ferrara, 738 Worthington Street, to manufacture automobile springs and equipment.

Scovill Mfg. Co., Waterbury, Conn., manufacturer of metal rods and tubing, wire, brass goods, etc., has increased production schedule and added to working force. During past few weeks about 300 operatives have been reinstated.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 15 for one motor-driven gate shear (Schedule 8976) for Boston Navy Yard; 20,000 fuse hole plugs and gaskets (Schedule 8981) for Portsmouth, N. H., Navy Yard.

Whitestone Rubber Co., Bridgeport, Conn., recently organized, has taken over local mill of American Woolen Co. for new plant for manufacture of line of rubber products. Unit will be ready for operation by first of year.

Second Lighthouse District, Department of Commerce, 37 Marginal Street, Chelsea, Mass., C. H. Robinson, engineer, is considering erection of one-story forge and blacksmith shop.

Lars Hogblom & Co., Simsbury, Conn., has been organized by Lars Hogblom, A. E. Neeler and Axel Swenson, all of Westogue district, Simsbury, to operate plant for manu-

facture of electric lighting fixtures and other wrought iron products, hardware and kindred specialties.

Shell Eastern Petroleum Products, Inc., 787 Commonwealth Avenue, Boston, has awarded general contract to Coleman Construction Co., 86 Weybosset Street, Providence, R. I., for new bulk oil storage and distributing plant at Salem, Mass. Cost over \$30,000. Headquarters are at 122 East Forty-second Street, New York.

◀ SOUTH CENTRAL ▶

United States Engineer Office, P. O. Box 97, Memphis, Tenn., asks bids until Nov. 7 for one-story equipment storage, distributing and repair building, 49 x 120 ft.; until Nov. 8 for two marine type gasoline engines, with spare parts (Circular 285).

City Council, Covington, Ky., plans installation of pumping machinery and other equipment in connection with extensions and improvements in municipal waterworks. Cost about \$75,000.

Elba Peanut Corp., Elba, Ala., plans installation of blow pipe system, mechanical fans, automatic shellers and other machinery in new plant at New Brockton, Ala., consisting of two one-story units, 60 x 80 ft., and 40 x 50 ft., respectively. Cost over \$40,000 with equipment.

Board of City Trustees, Salyersville, Ky., plans installation of pumping machinery and other equipment in connection with new municipal waterworks. A bond issue of \$35,000 has been arranged. **Fred Gessling**, Ashland, Ky., is engineer.

Rieback & Mandell, Inc., 1410 Broadway, New York, silk manufacturer, plans erection of power house, machine shop and other units at proposed new silk mill at Atmore, Ala. Cost over \$80,000 with equipment. **C. E. Hutchenson**, First National Bank Building Annex, Mobile, Ala., is architect.

◀ PACIFIC COAST ▶

Metropolitan Water District, 306 West Third Street, Los Angeles, asks bids until Nov. 10 for construction of about 45 miles 66,000-volt transmission lines, and 30 miles, 33,000-volt line, near Colton, Lakeview and Cabazon, Cal., with alternate bids for steel reinforced aluminum cable and copper cable, respectively. Also, at same time, for erection of two power substations, 6000 kva., each, and three power substations, 1000 kva. each. **J. M. Gaylord** is chief electrical engineer.

Paraffine Companies, Inc., 475 Brannan Street, San Francisco, manufacturer of heavy building papers, fiberized products, pipe coverings, etc., has plans for addition at plant at Emeryville, Cal. Cost over \$100,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 8 for one cold cut-off saw (Schedule 8958); until Nov. 15, one universal saw (Schedule 8973), one variety saw (Schedule 9001) for Mountain View, Cal., Navy Yard; one straight line cut-off saw (Schedule 8966), one bolt-threading machine (Schedule 8963), one grinder (Schedule 8974), all motor driven, for Puget Sound Navy Yard; four paint and color mills (Schedule 8975), 81,000 lb. galvanized steel plates (Schedule 9005), 4400 lb. aluminum alloy (Schedule 9006), 77,000 hull plate steel (Schedule 9022), 170,200 lb. galvanized steel (Schedule 9004) for Mare Island Navy Yard; two Diesel engines, each 150 hp. capacity, with spare parts (Schedule 8956) for San Diego and Mare Island yards.

Las Vegas Land & Water Co., Pacific Electric Building, Los Angeles, has plans for one-story and basement addition to citrus fruit packing plant at Pomona, Cal., 70 x 75 ft., with installation of mechanical-handling equipment.

Bureau of Yards and Docks, Navy Department, Washington, has awarded general contract to Dinwiddie Construction Co., Crocker Building, San Francisco, for airplane hangar and gasoline pumping plant at Naval Air Station, Sunnyvale, Cal., at \$222,600.

State Board of Harbor Commissioners, Ferry Building, San Francisco, Frank G. White, chief engineer, is planning extension of Belt Line Railroad to south waterfront industrial district early next year. Cost about \$500,000.

George W. Kneass Co., Eighteenth and Illinois Streets, San Francisco, operating a boat-building and repair works, is planning to rebuild part of plant, including marine ways, equipment, etc., recently destroyed by fire. Loss over \$100,000 with equipment.

City Council, Bremerton, Wash., plans pumping plant for municipal water system. **C. C. Casad**, chief engineer, in charge.

◀ FOREIGN ▶

American Foundation Co., 565 Fifth Avenue, New York, has secured contract from Government of Latvia, Riga, for hydroelectric generating plant on Duna River, including power dam, transmission lines, etc., to cost about \$5,000,000 with machinery.

Ministry of Finance, Government of Uruguay, Montevideo, Uruguay, is planning new Government-owned oil refinery, following recommendations of Government Commission recently appointed to arrange for national oil monopoly. Cost about \$1,000,000. Plans are also being considered for similarly controlled cement mill, to cost over \$400,000 with equipment.

Soviet Russian Government, Moscow, has authorized erection of new locomotive works on Toms River, about nine miles from Stalinsk Steel Works, Kuznetz, Siberia, designed to give employment to more than 10,000 workers. Project will include housing development and will cost about 150,000,000 rubles (approximately \$77,000,000). Work is scheduled to begin on superstructures in about five months, under direction of Administration of Stalinsk Steel Works. Soviet Government also plans six beet sugar mills in Biisk, Barnaul and Rubtsov districts, Western Siberia, to cost over 50,000,000 rubles (about \$25,000,000) and initial appropriation of 3,000,000 rubles (about \$1,500,000) has been made for project. **Amorg Trading Corp.**, 261 Fifth Avenue, New York, is official buying agency.

Federal District Government, Water Department, Mexico City, Mexico, is arranging for loan of \$5,000,000 for extensions and improvements in water supply, sewerage and drainage systems in Mexico City district, including installation of electric-operated pumping stations, power plants and other units.

Trade News

Globe Steel Tubes Co., 3839 West Burnham Street, Milwaukee, has appointed **W. J. Holliday & Co.**, Indianapolis, as distributors and sales representatives in Indiana south of Fort Wayne.

Lamson Co., Syracuse, N. Y., automatic conveyors and pneumatic tubes, under an agreement with **Jervis B. Webb Co.**, Detroit, will distribute overhead chain conveyor systems manufactured by the latter concern.

Oster Mfg. Co., Cleveland, pipe threading equipment manufacturer, has appointed **Par Kett Machinery Division**, Austin-Hastings Co., Cambridge, Mass., as its distributor in the New England territory.

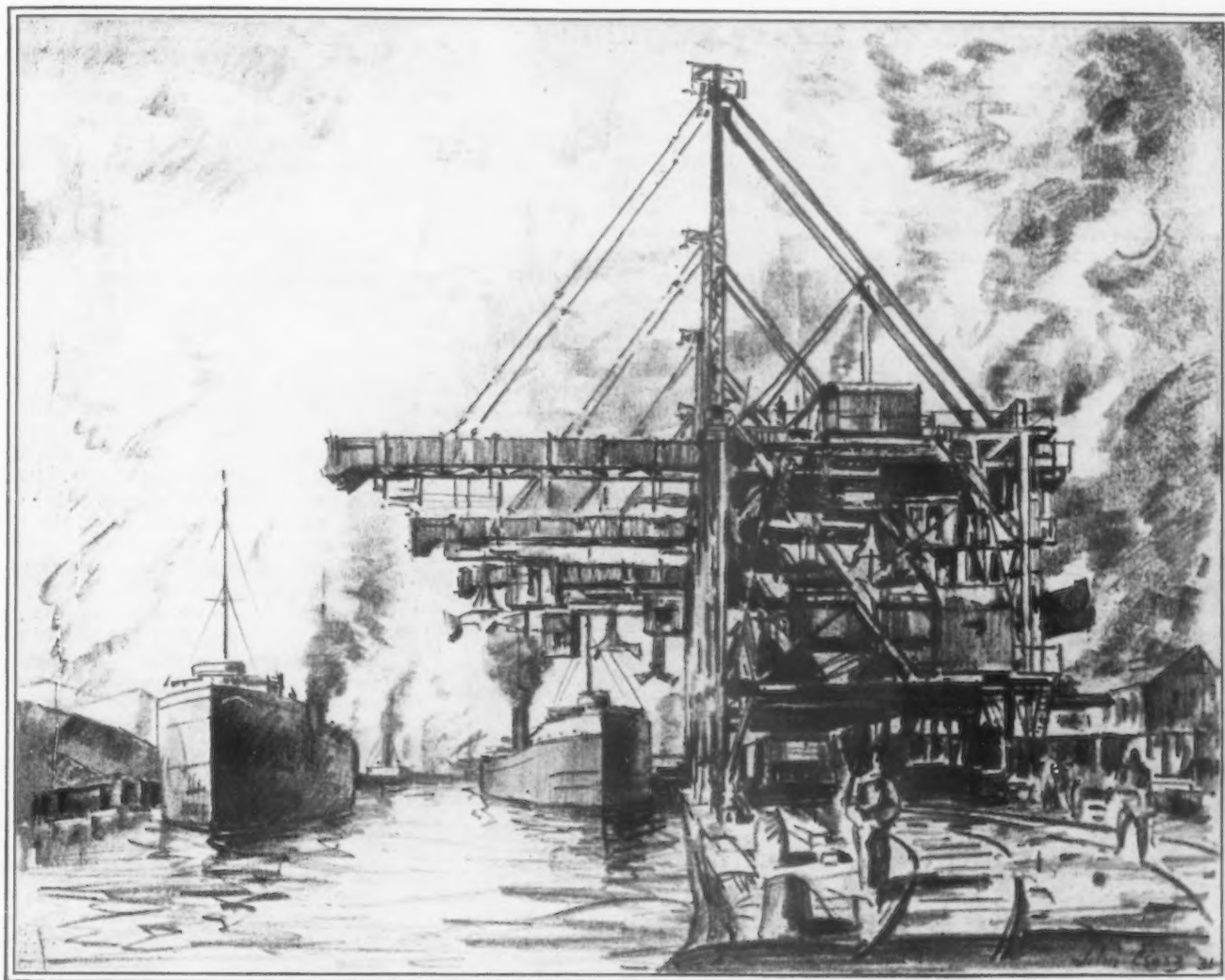
William G. Newton, consulting engineer, has established an office at 151 Court Street, New Haven, Conn. With his staff, Mr. Newton will specialize in die castings and die casting equipment. He was formerly secretary, **E. M. Gray Mfg. Co.**, East Orange, N. J.; president, **Marf Machine & Die Casting Co.**, Brooklyn, N. Y., and president, **Newton Die Casting Corp.**, New Haven, Conn.

Mills Co., Inc., Wayside Road at Nickel Plate Railroad, Cleveland, metal partition manufacturer, has appointed **Spickelmier Fuel & Supply Co.**, 1080 East Fifty-second Street, Indianapolis, as its sales representative in the central Indiana territory.

Malleable Castings Orders Increase

WASHINGTON, Nov. 1.—Orders for malleable castings in September increased to 10,768 tons from 7992 in August, a gain of 2776 tons, according to reports received by the Bureau of the Census from 117 establishments. Production rose to 10,168 tons from 7038 tons and shipments increased to 9778 tons from 8879 tons. Orders in the first nine months of 1932 aggregated 135,871 tons as against 245,182 tons in the corresponding period of last year. Output declined to 139,631 tons from 251,922 tons.

THE MEETING PLACE OF IRON



UNTIL the later decades of the nineteenth century the manufacture of iron was limited by the location of the ores. Quantities were so small that transportation presented no problem. The age of boundless quantity ushered in by improved processes and the immense stores of high grade iron ore in the Lake Superior district changed this. Cheap transportation by water, fuel and limestone supplies and the proximity of vast and ever increasing markets made the lower lakes districts

a meeting place for the materials which go to make iron and steel. Competent rail facilities and efficient shipping docks take the ore from the mines and put it into ships. Unloading devices of almost human skill take it from the ships for the use of furnaces. Ingots of gold or piles of precious stones would not make the contribution to the comfort and happiness of the people made by the supplies of ore and fuel which meet at the iron furnaces and pass on to the foundries and factories of the great middle west.

Interlake Iron Corporation has modern blast furnace and coke oven plants at Chicago, Toledo, Erie and Duluth. Each is strategically located with relation to economical transportation, efficient operation and proximity to markets. These plants supply the coke and iron which are basic requirements for so much of the mechanical accomplishment of the present age.

INTERLAKE IRON CORPORATION

PIG IRON & COKE

PICKANDS, MATHER & COMPANY, Sales Agents

CLEVELAND • CHICAGO • DETROIT • ERIE • TOLEDO • MINNEAPOLIS • DULUTH

New 7/8-In. Gridley Automatic Features High Speed and Accessibility

(Concluded from page 691)

way as the stock is fed out and the chuck closed, making the fourth position a working position available for any standard tooling. The stock reel turns in a guide, which is fastened to the frame to assure accurate alignment.

The chucking and feeding slides are supported by large shafts on which they have a long bearing. Chucking shoes have large bearing surfaces on chucking spools. The entire mechanism is supported by an arch fastened on the base of the machine. Cams for operating the chucking and feeding mechanism are arranged for quick changes on a drum under the slide. The guard casing that incloses the spindle driving gears also acts as a cam to keep the spools from moving forward.

Shafts in the gear box section are of large diameter and are mounted in anti-friction bearings. Gears are of hardened steel, and those that operate at high speeds are of the heli-

cal type. A safety clutch is provided in the worm gear that drives the feed and indexing mechanism. A complete system of lubrication is provided. A lubricating pump located over the gear box forces oil to a series of visible oilers from which a copper tube leads to each bearing. Before throwing in the feed the operator by depressing a lever can send a flood of oil to every bearing. The entire gear mechanism runs in a spray of oil. Cutting oil is pumped from the pan to a reservoir from which it is delivered to the various tools.

The machine will thread in the second and third positions and the same operating attachments can be used in either position for accelerated reaming or turning operations. The machine can be arranged for cross drilling, cross tapping, milling and slotting, eliminating, in many cases, it is claimed, the need for secondary operations. The recording instrument "Chronolog" is supplied with the machine as standard equipment.

Comparative Smelting Power of Coal and Coke

(Concluded from Page 685)

iron produced at the blast furnace.

On the other hand, although I have had no experience at charcoal blast furnaces, I understand that 80 bushels of charcoal per ton of iron is not uncommonly high. This corresponds with 1600 lb.

In comparison with coke, this seems quite a large fuel consumption for a charcoal furnace, even taking into consideration the small hearths of such furnaces. The amount of ash in charcoal is frequently as low as 1 per cent and rarely higher than 3 per cent. However, it often contains 30 per cent volatile matter, and consequently much less fixed carbon than coke.

It is probable, though, that the low fuel consumption of charcoal furnaces can be entirely accounted for on the basis of the chemical composition of the fuel, and the chemical and physical qualities of the slag produced, ignoring entirely the porosity of the fuel.

A comparison of the smelting powers of fuels of different types can of

course be of only academic interest in these days, when coke is practically the universal blast furnace fuel. However, the point I wish to stress is that porosity and combustibility have probably been overstressed, while the chemical composition of fuels has not been given sufficient attention.

Seatrain Freight Rates To Gulf Ports Approved

WASHINGTON, Oct. 28.—Movement of iron and steel products by seatrain became available on Wednesday, Oct. 12, when the Seatrain Lines, Inc., put into effect rates on merchant steel and reinforcing bars between Hoboken, N. J., and Texas points. The tariff schedule, filed with the Interstate Commerce Commission, became effective upon one day's notice, and carries rates of 65c. per 100 lb. to Austin and 79c. per 100 lb. to El Paso, Tex., from Hoboken, as against higher prevailing rail-water-rail rates. The seatrain rates apply to carloads, minimum 36,000 lb.

The rates apply when the Hoboken Manufacturers' Railroad is the originating line for shipments to Austin and the seatrain itself is the originating line for the El Paso shipments. The rate from Austin to Hoboken becomes 62½c. per 100 lb. and to El Paso it is 76½c. when applying as proportionals on shipments originating at Williamsport, Pa., where concrete reinforcement bars are made. All costs of drayage, wharfage, loading and unloading are to be borne by the Seatrain Lines, Inc., whose initial movement began on Oct. 6 and covered canned goods and a number of other commodities.

A rate of 78c. on knocked down steel shelving from Hoboken to Austin went into effect simultaneously with the steel bar rate.

The line marks a new departure in transportation for the United States. It was the object of protest by railroads and steamship companies before both the Shipping Board and the Interstate Commerce Commission. The latter found itself facing a new transportation system whose status yet remains to be determined by an investigation the commission has instituted. Nevertheless, it permitted the rates to become effective. The purpose is to develop the movement until it will cover all commodities.

The Hoboken Manufacturers' Railroad is owned by Seatrain Lines, Inc. Loaded cars are lifted by crane from the track of this line at Hoboken and set on track in the seatrain, carried to Gulf ports via Havana, Cuba, and then lifted from the seatrain and set on tracks at terminal stations at the ports, and transported to interior destinations. This obviates the necessity of unloading cars into vessels, and again loading them, and thus expedites shipments. The loading equipment was furnished by the Shepard Niles Crane & Hoist Corp.

Connections so far made by Seatrain Lines, Inc., include the following railroads operating in Texas: Beaumont Sour Lake & Western; International Great Northern; New Orleans & Lower Coast; New Orleans, Texas & Mexico, and the Texas & Pacific.

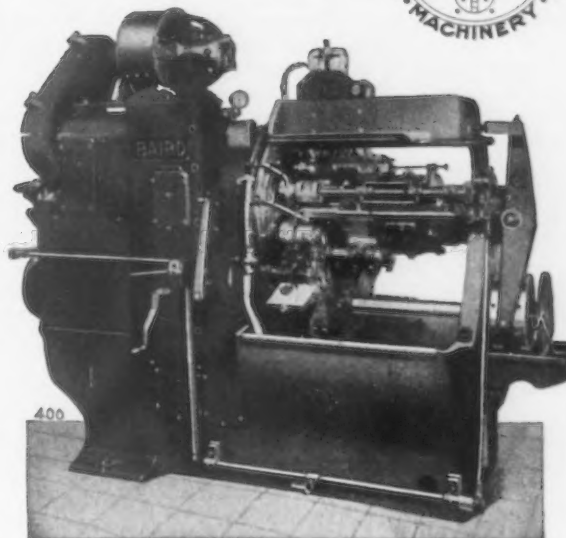
Higher Australian Tariff in Effect

WASHINGTON, Oct. 28.—The iron and steel and machinery schedules of the new Australian tariff, like the revised Canadian tariff, increases general duties, applying to the United States and other non-treaty countries. It also lowers or removes duties and widens preferentials applying to the United Kingdom, Canada and New Zealand. An outgrowth of the Imperial Economic Conference at Ottawa last August, the Australian tariff is to prevail for a period of five years.

BAIRD AUTOMATIC LATHES



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HIGHEST
PRODUCTION
WITH
LEAST
MANUAL ATTENTION



BAIRD 7" SIX SPINDLE HORIZONTAL

These "BAIRD AUTOMATIC LATHES" are the result of over 60 years of a very diversified experience in designing and building high grade, high production, automatic machinery as required to produce the most common articles in use mostly made of metal and as demanded by the leading and most exacting of manufacturers in order to obtain highest production at lowest cost.

BAIRD AUTOMATIC LATHES are BUILT ACCURATELY TO STAY ACCURATE, capable of producing work to the highest degree of accuracy obtainable.

AUTOMATIC MECHANICAL CHUCKS

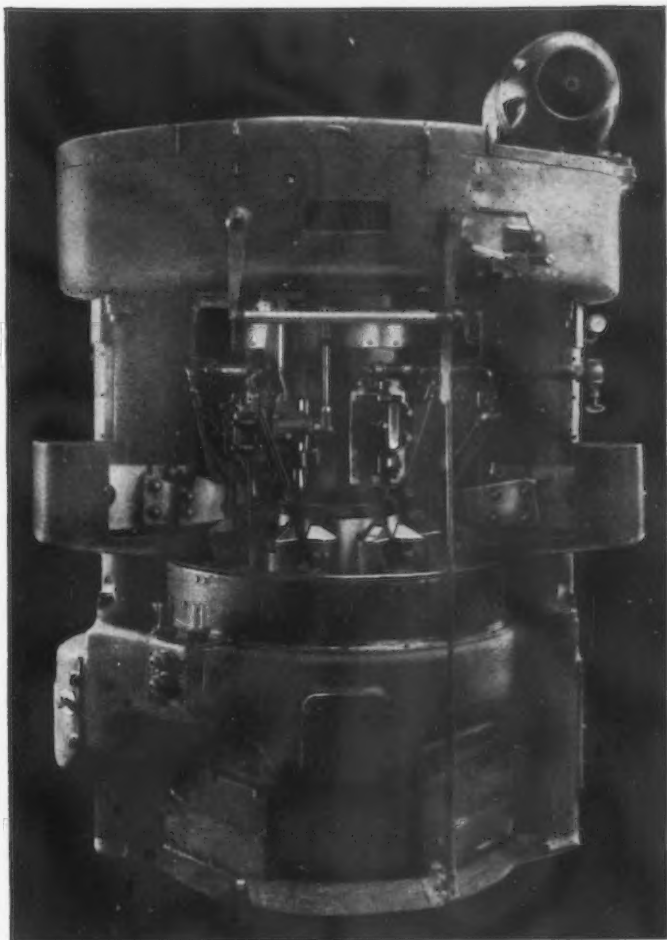
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BRIDGEPORT, CONN.



BAIRD 10 1/2" EIGHT SPINDLE VERTICAL
Equipped with New Departure ball bearings—Timken roller bearings

Melting and Rolling of the Rustless Steels

(Concluded from page 689)

bon or the lower alloy steels. As the rustless types tend to spread in the rolls, they require tighter guides. They also tend to build up scale on the guides, which marks the bar. Bars that are to be converted into tubes must be rough turned before being heated for piercing.

If a considerable quantity of sheet bar of one size is required, it is rolled on a bar mill or universal strip mill. For smaller lots it is better to roll slabs on a jobbing mill into plate, which is cut into sheet bar sizes. However, before rolling the surfaces, the slabs must be chipped and ground. In heating the slabs the furnaces must be kept clean and free from dust. They are gas-fired and kept slightly reducing to keep scale to a minimum.

Due to the low heat conductivity of the rustless groups, the heating time is usually from one and one-half to two times that of carbon steel. Water under pressure is used to keep surfaces of slab clean in roughing passes. The plates are flattened while hot and generally sheared into sheet bar sizes while still warm. The sheet bar thus produced is pickled in a 10 per cent solution of sulphuric acid at 150 deg. F. and ground free from defects. Sandblasting is also employed at times to clean the surface followed with a light pickle to bring out defects which must be ground out.

Sheet Production One-Third Ordinary Steel

Production of rustless steel sheets is about one-third that which could be obtained from rolling common sheets. One reason for the reduced production is that only a limited number of pieces can be made on the rustless groups before they are reheated and another is that the amount of reduction per pass is generally from 14 to 16 per cent as compared with 25 per cent for common steel. Relatively low temperatures are employed in rolling the straight chrome types, this being necessary to obtain a fine grain finished product that will anneal to maximum ductility.

The low and medium chromes, if carbon is under 0.12 per cent, may be air cooled from their annealing temperature and hence may be annealed in the continuous furnace. Those having 0.12 per cent and over of carbon must be furnace cooled or box annealed. The austenitic 18 and 8 grade is air cooled up to 16 gage and water quenched in this gage and heavier. The annealing temperature is usually 1900 deg. Treatment of complex alloys depends on their use and method of fabrication. Annealing on all grades produces a scale, which is removed by various pickling solutions.

To produce sheets with a better than the usual surface for polished

and decorative work, the material is reduced one or more gages in a cluster 4-high cold mill or its equivalent. The mill used has two very hard 14-in. diameter rolls and 27-in. backing up rolls. It is general practice to reduce 10 per cent in gage then reanneal, pickle and cold roll on ordinary cold mills and roller level. For still flatter sheets it is necessary to stretcher level. Strip is rolled from slabs usually 3 in. thick by 8 to 15 in. wide and of length to make a 100-ft. finished strip. They are heated in a continuous pusher type furnace and broken down with a 24-in. reversible 2-high universal mill with vertical rolls. Correct reductions per pass are important to obtain best surface and edge conditions. While some of the alloys of the complex group can be rolled into strip, some others are too stiff and the edges crack badly, making it inadvisable to attempt strip rolling.

When making cold rolled strip the hot rolled coils are annealed and pickled prior to cold rolling, the annealing temperature depending upon analysis. The low chrome steels may be box annealed in coils. The medium group with 16 to 18 per cent chromium, which is popular with the automotive trade, has the largest demand in strip form. The annealing temperature in the continuous operation is approximately 1550 deg. A 30-ft. furnace is used for annealing.

The annealed strip is given two passes through a tandem mill of three 4-high stands, making a reduction in excess of 30 per cent. Then it is annealed, given additional cold rolling through the tandem mill and final passes through a 2-high mill having highly polished rolls to bring out the best possible surface texture. Final anneals are through a short muffled furnace.

The trade demands in the 16 to 18 chrome steel a strip which will polish by buffing when the gage is below 0.030 in. For this reason utmost care is needed to prevent surface defects. The chrome-nickel grade has a varied demand, including soft and hard tempers. Methods of polishing rustless steels were described.

Discussion

In a written discussion Daniel J. Giles, metallurgist, Latrobe Electric Steel Co., congratulated the authors on the excellence of their paper but stated that they had failed to include steel containing 14 to 16 per cent chromium, which he said has a wide use. The fabrication of steel of this composition is about the same as the authors recommended for the low chrome group, he stated. He also spoke of the broad range of chromium content contained in the group of

medium chrome alloys. Mr. Giles stated that it has been his experience that rustless products containing up to 16 per cent chrome require one method of fabrication, 16 to 20 per cent a slightly different method of handling and 20 to 30 per cent still another change in processing. He was glad to note that the authors had listed 18 and 8 steel in one group and all the other chrome-nickel rustless alloys in another group. The fabrication of the former, he said, is much more satisfactory than that of alloys containing higher percentages of chromium and nickel.

Referring to the authors' statement that low and medium chrome absorb moisture, H. H. Ashdown, metallurgist, Westinghouse Electric & Mfg. Co., said that, by poling with a green pole before tapping both low chrome and nickel-chrome alloys with a view of lowering the carbon content, a considerable volume of gas is absorbed which is liberated during solidification, causing the steel to rise in the mold, but this can hardly be termed moisture. He questioned the authors' statement that 11.5 to 12.5 chrome cutlery steels contained a carbon content as low as 0.12 to 0.13 per cent. His own experience has been that this steel has a carbon content of around 0.40 to 0.60 per cent.

(To be concluded)

Rustless Steel for Breweries

Experience abroad has demonstrated the exceptional suitability of stainless steel of the 18-8 chrome-nickel type for equipment used in the brewing industry, says a booklet, "Use of Stainless Steel in the Brewing Industry," recently published by Electro Metallurgical Co., 30 East Forty-second Street, New York. Exhaustive tests have been conducted in England to determine the effect of beer upon this alloy steel and of the steel upon the beer. It was found that in every case the beer produced was of excellent quality. The steel also proved to be inert to the action of fermentation.

Rustless steel has been used for some time for brewing equipment in England, Germany and Switzerland with marked success. Practically all types of apparatus such as yeast pans, fermentation vats, tanks, coils, casks, etc., have been made from this alloy steel.

Colorado Fuel & Iron Co. reported a deficit from operations in the third quarter of \$1,225,265, after deducting charges for depreciation, exhaustion of minerals and interest. The deficit for the nine months ended Sept. 30 is \$2,419,734, which compares with a deficit of \$1,585,527 in the corresponding period in 1931.



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Hamlock 1000

LOUISVILLE... Magnolia 1693... Stock of Bars for Concrete Reinforcement and Bar Fabricating Yard

MEMPHIS... 6-4836... Distributing Warehouse for Pipe, Sheet, Spikes and Wire Products,
Reinforcing Bar Warehouse and Fabricating Shop

Recommended Practice for Foundry Patterns

A new American recommended practice for foundry patterns of wood (B45.1-1932) has been approved by the American Standards Association. The standard was submitted by the American Foundrymen's Association, which had an important part in its development, and which has been appointed joint sponsor for the project with the American Society of Mechanical Engineers.

The standard color markings provide the molder with correct information regarding location of cores, the surfaces to be machined, the portions to be filled where stop-off construction is used, and also insure preparation of the mold in the proper manner.

The new standard was developed by a committee consisting of two members each of the American Foundrymen's Association, the American Society for Testing Materials, the Steel Founders' Society of America, the National Association of Pattern Manufacturers, and the American Institute of Mining and Metallurgical Engineers.

By-Products of Research Often Most Important

Research—the proper mental attitude toward it and the importance of its by-products—was discussed by Harry L. Horning, president, Waukesha Motor Co., Waukesha, Wis., at a meeting of the Metropolitan section of the Society of Automotive Engineers, at the Hotel New Yorker, New York, the evening of Oct. 20. Guests included a large number of engineering teachers, students and engineers of prominence in research and development work.

The value of indirect results, collateral discoveries, or by-products was emphasized by Mr. Horning, who said that such by-products in the majority of cases equal the primary objectives in importance and in many cases are of greater importance. He cited a case of research instituted to develop a cylinder iron that would not "grow" in service; from it more than 10 by-products resulted.

The tendency to go off on a tangent during a research and the tendency to delay the finish were warned against. It seems that bringing a research problem to a conclusion is the most difficult part of the task, he said, and most of the value of research is lost at this time. When the research is completed there usually is a psychological collapse which greatly delays following through to the application of the idea. Skepticism of the practical man toward the results is usually to be expected, as well as difficulty in

getting the market and the world in general to adopt the results of the research.

Dr. A. E. Becker, Standard Oil Development Co., New York, was chairman of the meeting. Sir Ernest W. Petter, chairman of the board, Petters, Ltd., Ipswich, England, oil engine builders, and Dr. H. N. Davis, president, Stevens Institute of Technology, Hoboken, N. J., briefly discussed Mr. Horning's interesting address.

Institute of Metals to Celebrate Anniversary

The Institute of Metals (British) has just issued a comprehensive program of meetings to be held during the ensuing twelve months. The coming year promises to be a notable one in the history of the institute in that it marks the twenty-fifth anniversary of its foundation. The twenty-fifth annual general meeting will be held on March 8 and 9 in London, while the silver jubilee autumn meeting—which will constitute the real anniversary gathering—will be held in September in a provincial center. The other general meeting will be held on the occasion of the twenty-third annual May lecture, to be given in London on May 10 by a distinguished scientist whose name will shortly be announced.

Apart from the general meetings of the institute, the program includes particulars of over 40 lectures and addresses to be given before the six local sections, which are located, respectively, in Birmingham, Glasgow, London, Newcastle-on-Tyne, Sheffield and Swansea.

World Shipbuilding In a Decline

Merchant vessels under construction in the world's shipyards at the end of the third quarter had a total tonnage of only 901,000 tons, compared with 1,109,773 tons at the close of the second quarter and 1,531,000 tons at the end of the third quarter of 1931, according to statement by Lloyd's Register. Unfinished merchant vessel tonnage in the United States on Sept. 30 aggregated only 124,703 tons, against 162,203 tons on June 30. All other maritime countries, with the exception of Japan, showed declines. As against nine large merchant ships, each of 20,000 tons and upward, that were being built throughout the world at the end of the June quarter, Lloyd's Register now reports only five such vessels under construction: two in Great Britain and one each in the United States, Italy and France.

River Movement of Steel Declined in September

Movement of iron and steel products on the Ohio River in the Pittsburgh district during September amounted to 28,557 net tons, according to the United States Engineer Office, Pittsburgh. This compares with 43,621 tons in August, and with 49,269 tons in September, 1931. Monongahela River movement of iron and steel during September totaled 18,831 tons, as compared with 26,390 tons in the preceding month, and with 25,508 tons in the corresponding 1931 period. Twelve hundred tons of iron and steel was moved on the Allegheny River in September, 3400 tons in August, and 8525 tons in September, 1931.

New American Standards for Copper Wire Bars

As the result of a recent action by the standards council of the American Standards Association, the following two specifications for copper wire bars have been added to the list of American Standards:

Standard Specifications for Lake Copper Wire Bars, Cakes, Slabs, Billets, Ingots, and Ingot Bars (H17.1-1932).

Standard Specifications for Electrolytic Copper Wire Bars, Cakes, Slabs, Billets, Ingots, and Ingot Bars (H17.2-1932).

The American Society for Testing Materials has been granted proprietary sponsorship to care for future revisions of these specifications. The A.S.T.M. designations are B4-27 and B5-27, respectively.

Employment Gain in Philadelphia Shops

September employment among the 45 firms on the monthly labor turnover report of the Metal Manufacturers' Association of Philadelphia reflected an increase of 3.4 per cent over that of August employment. The increase was accounted for in the light pressed metal and heavy pressed metal groups, while employment in the machine shop and medium pressed metal groups remained practically unchanged. An expected increase of approximately 2 per cent in employment for October will likely occur largely in the light pressed metal and heavy pressed metal groups, according to the report.

The 1933 annual meeting of the American Society for Testing Materials will be held at the Hotel Stevens, Chicago, June 26 to 30, during the Century of Progress Exposition.

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